BEADED TWEETS: BRINGING THE DIGITAL BACK TO THE PHYSICAL THROUGH CULTURE (BEADING)

by

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Abstract

Nelson Leeson (2007) described success for Nisga'a students as the ability to "dance in both worlds" (p. 9). This project combines binary coding language with loom beading, providing a space where both Western and Indigenous concepts are honoured. The practicality of the project for a classroom setting will provide teachers a tangible way to interact with coding as well as focusing Indigenous content through beading. Marshall McLuhan's (1964) theory that the "medium is the message" (p. 5) is connected to indigenous pedagogy; the medium here is the loom and process of beading. By working through and reflecting on the 8 beading foci and needle and thread teachings, students and teachers can relate them to the provincial curriculum core competencies. Participants will be using the digital and material aspects of culture to join the conversation of reconciliation.

Keywords: Indigenous pedagogy, beading, beaded tweet, Aboriginal education, coding, binary, maker, ADST, curriculum, reconciliation

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Dedication

This project is dedicated to my niece and nephew, Betty and Emil Borne of the wilp Ksdiiyaawak and future generations of the Nisga'a Nation. I can't wait to see you "dance in both worlds".

Chapter One

This project is intended to provide teachers a practical, hands-on unit and framework, designed to aid with incorporating curriculum changes and Indigenous content into the classroom. The central foci are on the recent additions of Applied Design, Skills and Technology (ADST), coding language, and Indigenous content. The unit and framework are structured around Indigenous pedagogy through the medium of beading, and aim to engage tactile and kinesthetic learners.

Curriculum Change

British Columbia designed and implemented a new elementary curriculum in September of 2016. The updated curriculum includes a new section on Applied Design Skills and Technology (ADST), embracing the Maker movement as well as computer science and design thinking. The emphasis on skills and processes have changed the curriculum drastically, as students are now learning skills and ways of thinking to prepare them for unknown future employment opportunities (B.C. Ministry of Education, 2017). This shift away from specific content provides teachers more freedom to pursue different processes and provide a more cross-curricular program tailored to the individual student. The new curriculum is intended to make Indigenous ways of knowing, history and culture accessible, and Indigenous content is interwoven into all subjects and grades. These curricula work toward reconciliation by improving education for Indigenous students. Schools also must become the space for all learners to work towards reconciliation while learning Canada's collective history. There has been a call for change to curriculum since the Indian Control of Indian Education Policy (National Indian Brotherhood, 1972) and continues to be called for in the Truth and Reconciliation Commission's Recommendation 10 (iii) (2015, p.2).

The Maker Movement started in 2005, with the publishing of *Make* magazine, and has become an influential educational movement with publications including the *Maker Movement Manifesto* (2013) and *Invent to Learn* (2013). The *Maker Movement Manifesto* has nine concepts; make, share, give, learn, tool up, play, participate, support, change (Hatch, 2013, p. 1). Hatch (2013) describes a Makerspace as "a center or workspace where likeminded people get together to make things." (p. 13). Teachers can use these concepts to access content, creating opportunities for students to learn in a way that is meaningful to them and their community, while also fostering creative and critical thinking.

The 2016 curriculum is intended to prepare students to be Makers not only consumers of technology. The STEM (Science, Technology, Engineering, and Math) movement started in the United States in 1995 (McCleary, 2011) to promote hands-on, experiential science learning, which has now evolved into STEAM (Science, Technology, Engineering, Arts, and Math). STEAM provides a more holistic outlook, expanding to subjects other than science. This expansion into cross-curricular design provides teachers and students more entry points to science education. Online resources are also provided to aid teachers with this new curriculum, including websites like code.org and coding toys like OZO bots, emphasizing hands-on learning experiences.

Our Makerspace program at Nusdeh Yoh, House of the Future, uses an Indigenous lens and content to achieve English Language Learner goals. We share our projects and learning through Twitter (https://twitter.com) under the username @INDIGital_space as well as through individual teacher accounts. Twitter and other social media are increasingly part of life for students and teachers, and our classrooms are changing to reflect this reality, with a focus on safety and online etiquette. Coding allows the Maker movement to be applied to our technology and how we use it, but this opportunity raises a number of questions. How can we

harness the power of social media and other platforms to change the world? Technology allows for global news updates to be sent right to our pockets through our smartphones; how do we harness this idea, and connect with students who have only ever experienced life with immediate access to information? Critical thinking skills are especially important for students to sort through all of the information that is presented to them through social media. Learners today are more readily able to access and create global conversations, and to learn from multiple sources of information.

Accessibility is an important issue for Urban Indigenous populations. More Indigenous peoples are living off reserves and in urban settings, and want to maintain connections with their communities, culture, and language. Nisga'a Lisms Government (2018) states there are approximately 6,838 Nisga'a citizens and according to Statistics Canada Census (2016) there are 1,880 Nisga'a citizens living on traditional territories. This creates a need for cultural connection across geographical divides, and social media and technology are tools that can help bridge those divides. For example, the social media platform Instagram (https://instagram.com) allows publicly sharing photos or short videos, which can also be grouped according to culturally relevant hashtags, including #Nisgaa.

These tools are being accessed by students and educators, including myself. I am Nisga'a residing in Prince George, British Columbia, and I am learning more about the Sim'algax language group through following cultural teachers on Instagram and using the Nisga'a smartphone app. Social media connections to family members who live in the villages and in Vancouver, BC are also a central source for my cultural learning. These connections provide me access to something I may not have had if the technology did not exist, or we only used it for consuming.

Catching Up to Change

The new curriculum has created a space for content that was not required before but has also created challenges, as some teachers need support in integrating this new material into practice. This has created tension and hesitation for some teachers who have not had formal education about Indigenous history and ways of knowing. How can we balance and manage that tension for teachers and help them access Indigenous content? The different worldviews and lack of knowledge around Indigenous ways of knowing creates challenges for both Indigenous and Non-Indigenous Teachers. This project is designed to support all teachers in this transition period, and improve access to the new curriculum content for students, regardless of the teacher's prior knowledge or experience.

Not all content is created in a way to honour both Western and Indigenous perspectives. Workbooks with an emphasis on history alone can emphasize hurtful or incorrect messages. One example of this is the workbook by Second Story Press for the graphic novel; *Susanna Moodie: Roughing in in the Bush,* written by Carol Shields and Patrick Crowe. The resource is based on Susanna Moodie's 1852 book about the settler experience in Ontario at the time. The word squaw was used numerous times in the original book, and this term was incorporated in the workbook in a task for students to connect politically incorrect words to the cultural group they describe; in this case the word squaw to Indigenous woman. The intent was to show that the word was politically incorrect, but it affected students in a hurtful way. A fourteen-year-old Indigenous student at a Vancouver high school was upset about the content of this assignment, and showed it to her mother, Shawna Davis. Davis, using the Twitter handle @Hayatsgan, tweeted "May brought this up to me because it genuinely upset her. She brought this to me because she knows its [*sic*] racist. Not 'political correctness'" (Davis, 2017a). When asked about how Davis felt about

the experience she responded to Angela Sterritt (2017) that it “felt like a punch in the gut that her daughter had to go through this” (para. 8). The publisher pulled the workbook as a result media outrage. The British Columbia Teachers Federation’s president spoke about the issue with a CBC reporter, stating that "the BCTF has been pushing the province to beef up school references on the history of residential schools and infuse more Indigenous content in all subject areas from kindergarten to Grade 12" (Sterritt, 2017, para. 25). This incident emphasizes the necessity for more teachers to work toward reconciliation by infusing Indigenous content ways that are appropriate, and respectful of all students and Indigenous ways of knowing.

Materials are an important tool to help teachers feel comfortable teaching content that is new to them, and practical projects can help introduce this content to students. This project is intended to provide practical lessons and education to ease the discomfort and fear of teaching Indigenous content appropriately. Emily Milne (2017), an assistant professor of sociology at MacEwan University in Edmonton, found that part of the reason that non-Indigenous educators are reluctant to incorporate Indigenous material in their classroom is because they feel uncomfortable or intimidated. This feeling of intimidation can be relieved by providing professional development sessions, as well as providing curriculum coaching to help implement the new content. This project is based in Indigenous pedagogy and practical application, combining theory and practice to provide teachers with a classroom ready unit plan. The project emphasizes that Indigenous cultures are resilient and evolving, embracing common tools and practices to move forward. The Maker and coding aspect of the project allow for personalized learning, with exposure to Indigenous ways of knowing. As teachers we need to shift our attitude towards Benny Shendo’s proverb, “don’t teach me about my

culture, use my culture to teach me" (as cited in Ohia, 2012, p.12). We need to see Indigenous ways of knowing as processes for learning and not just as curriculum content.

The Project Questions:

1) How can educators explore contemporary content with traditional approaches in a tangible and practical way?
2) What framework can help educators create learning experiences where we integrate Indigenous content and culture with the British Columbia curriculum?

Personal Location

Having a Nisga'a mother and a French Italian father, I am a child of two worlds. I have many names; my Nisga's name, Gwiix Silwilayinsgun Gibuu (Always Learning Wolf), Ksim Prince George (Name given to me by my late Ye'e Percival Tait, and continued use after he passed by my late Jiits, Elizabeth Davis). These two names, and also my legal name Noelle Elizabeth Pepin, show my relations and connection to places. These relations and connections have guided and influenced my experiences. My father, Noel Pepin, was a teacher until his retirement and I have now followed in his footsteps. My Nisga'a culture provides me with strength through my identity and connection to Indigenous knowledge. I identify myself through my mother's side because Nisga'a follow the matrilineal line. I am a Nisga'a woman from the Laxgibuu (wolf) clan of the house Ksdiiyaawak.

My Nisga'a name Gwiix Silwilayinsgun Gibuu was chosen for me by my Jiits, and is a reflection of my passion for learning. My education took place in Prince George, British Columbia at UNBC, and also in the same school district which I am now employed. I work as a Makerspace/English Language Learner Teacher at Nusdeh Yoh, the Aboriginal choice school in Prince George. My summers and any other school holidays were spent in the village of Gitlaxt'aamiks, nestled in the Nass Valley. My exposure to both communities has

made me who I am today, and influences the choices I make, including to become a teacher, and how I teach and think.

My Nisga'a worldview is based on relationality, and is governed by Ayuukhl (oral traditional laws), starting with respect for everything around us. Nisga'a must always think about what they will say before they say it. The traditional labret piercing was a Nisga'a way of training young women in this skill. K'ets'kw niinis, meaning you have a labret is what is said to a Nisga'a woman after she speaks clearly and with courage (Boston, Shirley, & Grandison, 1996, p. 129). I have a labret piercing and hope that I can speak clearly and courageously, designing an inclusive framework and unit for both culture and the curriculum.

My experiences and teachings come from both Nisga'a and Western views of the world; my goal is to provide students the opportunity to "dance in both worlds" (Leeson, 2007, p. 9), exploring ways to express contemporary content and issues through traditional mediums or vice versa. As a Makerspace/English Language Learner teacher at Nusdeh Yoh (House of the Future), I aim to foster creativity and collaboration through a cultural lens, and I want to share this experience with other teachers.

Beaded Tweets Beginnings

As part of a SET-BC coding inquiry project 2016/2017, I introduced ASCII and binary language to a class of grade 3 and 4 students by having them code their names using pony beads; adapting and using resources from Binary Baubles (Thinkersmith, 2013) a lesson to aimed to introduce students to basic coding. Each letter of the alphabet can be represented in ASCII/Binary as an eight-digit combination of 0s and 1s. Students chose two colours of beads to represent each number, and then used tables to translate their names into binary code as beaded necklaces or bracelets. The students' enthusiasm led to them making 2 maybe 3

bracelets or necklaces. They were so focused once they finished their initial bracelet that we continued making gifts for their families until the end of the day.

I had just started to learn how to bead on a loom from a friend and colleague at Nusdeh Yoh, Rhonda Pierreroy. While preparing for this lesson I had an epiphany! The connection between traditional loom beading and the binary code is my "8 bead language". 8 bead language is much like 8-bit language; each bead represents a bit, and a row represents a byte, or letter. This allows for a tangible way of expressing of contemporary messages (tweets) through traditional medium (the loom).

We can use the 8 bead language to create a "Beaded Tweet", in which we use the language to interact with our contemporary strictly digital realm. The beading takes what was only digital, like a 140-character tweet, and makes it physical. Making something intangible tangible can create an access point for students, because it takes an abstract idea and makes it something students can see, touch, and build.

Project Description

This project consists of a unit plan and framework that teaches students how to make a Beaded Tweet bracelet, and in the process experience connections to culture and ADST. The framework is based in the Indigenous pedagogy of beading. The unit is based on a framework which uses 8 foci of beading, and teachings from the needle and the thread to connect with the B.C. curriculum's core competencies. The lessons and framework provide guidance when teachers are trying to explore curriculum and Indigenous content. The bracelet is a symbol of resiliency and an example of contemporary content expressed through a cultural medium, and the lessons and skills learned in the process of making one can be an access point to the conversation on reconciliation.

Chapter Two: Literature Review

My project is interdisciplinary and draws from media and technology studies, Indigenous studies, and practical education models. My project is framed around integrating and interpreting both Indigenous Knowledge and Western knowledge. The Indigenous literature provides a context for Indigenous ways of knowing, and the central Western knowledge explored is based on Marshall McLuhan's theory, "the medium is the message" (1964, p.5), as well as education policy and practices. I also use my experience and learnings from my teachers and culture as a lens to connect my literature review. This project also explores education practices for culturally responsive education, and historical policy that influences Indigenous education in British Columbia.

Theoretical and Cultural Foundations

Marshall McLuhan's (1964) theory that "medium is the message" (p. 5) in which the form of a message can communicate information as significant as the messages themselves. It has hugely influenced the field of media studies. In this theory, the medium itself contains messages, and shapes how human interaction with technology impacts interrelationships (Roncallo and Scolari, 2016). These impacts on culture and communication impact society as a whole, and are especially important in education. How students and teachers communicate together and amongst themselves is increasingly shaped by technology.

Keane Tait or Wal-aks, taught me, culture in the Nisga'a dialect of Sim'algax translates as "Lip Wilaa loom, the things we do for ourselves" (personal communication, July 27, 2017). The relationship between the things we do as a culture or community directly relates to the perception of the cultural messages we communicate to observers. It is the act of doing things specific to a culture that makes that culture strong, and it is just as relevant in shaping the messages communicated.

Peter McKay, a Nisga'a educator and family member, taught me about "living culture" (personal communication, June 29, 2015). Nisga'a culture, defined as the things we do, is still practiced because we are still here, doing the things our ancestors have done, using the traditional items as they should be used. Otherwise, they are not fulfilling their purpose. As I learned to cedar weave from Peter, he explained in a calm, soothing voice that there is a connection to the cedar tree, and why it gave up its bark to you was so it could be useful to you, not to decorate your walls. Nisga'a culture and pedagogy are based in doing things and how you do them. Our culture is changing, but still maintains its fundamental core, because we may be using contemporary items, but the ancestral teachings are still present.

Culture is an ever changing thing, and this affects how teachers teach. John Chambers Christopher's (1996) view on culture in Counseling's Inescapable Moral Visions, and its impact on both individual and collective culture, is that both exist in the community and work together or against each other. As one evolves the other has to adapt. Culture should grow and change because as people grow and change, they change the culture or adopt another. Indigenous knowledge, and how it is transferred, is directly linked to Indigenous pedagogy. Culture and language are not separate entities, and both the teacher and learner are active participants in Indigenous knowledge. The aim of this project is to help teachers infuse aboriginal content and ways of knowing and teaching into the classroom, providing a context to help respectfully deliver the new curriculum.

Indigenous Knowledge

Indigenous knowledge is an expansive network of relationships, interactions, observations, and practices of a physical, emotional, and spiritual nature; focusing on the interconnectedness and holistic nature of a local area (Archibald, 2008; Battiste & Henderson, 2000; Battiste, 2013; Catjete, 2000; Little Bear, 2000; Smith, 2000). Castellano

describes three types of Indigenous knowledge: traditional, originating from previous generations; empirical, generated from observation, and spiritual, knowledge revealed from dreams or visions (as cited in Battiste, 2013).

These three types of Indigenous knowledge are interwoven into every part of life in Indigenous communities. It is often heard of that an Elder is someone who lives their life in a good way (Leon, 2012). Elders are often the Indigenous knowledge holders or protectorates.

Celia Haig-Brown (2010) examines the way people think, and the act of knowledge appropriation. She explored how Non-indigenous researchers can misappropriate knowledge because of their Western discourse. Western and Indigenous thought come from different places and worldviews. Western worldviews are generally more linear and compartmentalized, whereas Indigenous worldviews are generally more holistic and interconnected, creating clashes between the two (Battiste & Henderson, 2000; Cajete, 2000; Little Bear, 2000; Wilson, 2008; Kovach, 2009).

Dr. Marlene Atleo (2009) studies Inter-generational transmission of knowledge structures in her article focusing on Nuu-chah-nulth elders' examination of the Umeek narrative, a traditional story of the first whaler. The elders identified important themes in the narrative as well as eight traditional methods of learners or leaders demonstrating the ability to relate to a diverse community of learners. The themes identified included parental care and grandparents' teachings, spiritual bathing, partnerships between husband and wife, ritual sites and Ancestors names (Atleo, 2009, p. 118). She used the Indigenous story as a lens for the elders, with experience with both Indigenous and Euro-heritage views, acknowledging and using the viewpoints of both. This article and its findings demonstrate how Indigenous knowledge can be used to shape and direct cultural change, as well as be translated to another

context with good intentions and appropriate protocol. It also demonstrated the connection to land, people, spirit, and multiple layers within the narrative.

Indigenous stories are not meant to be categorized according to time; they are meant to transcend time and connect more with location (Kovach, 2009), adding to the interconnectedness of everything. Elder Murdena Marshall explains a story created from ancient Mi'kmaq teachings meant to combine both Indigenous and Western content (Harris, Bartlett, Marshall, & Marshall, 2010). From a line in the story, "the sky will always be there. You are part of the sky when you are on Earth. It is a part of your everyday life. The sky is alive and demands respect from you." (p. 16). Elder Murdena Marshall expresses that the use of the present tense is meant to reinforce the concept of a circular time, and that these topics are as relevant to modern times as to their original context (Harris et al., 2010).

Aboriginal Education Policy

Aboriginal education policy is a modern issue; teachers are required to teach the joint history of Canada, which includes the Indian Act, Residential schools, and Truth and Reconciliation Commission recommendations. The history of Aboriginal education is important to all learners and critical when teaching Aboriginal content and ways of knowing. This history is not separate from those teachings. Aboriginal children were sent to residential schools starting in 1883, and this continued up until the mid 1990's (Truth and Reconciliation Commission, 2012). Residential schools were horrific places in which children were not allowed to speak their language, and were subjected to mental, physical, sexual abuse. Survivors of the residential schools have spoken out to the Truth and Reconciliation Commission, and the government of Canada has formally apologized to the survivors of residential schools. The trauma from these events is still felt in generations after who may not

have gone to residential school, but have parents who did, and it affects and has affected their views on family, community, and themselves.

These schools worked in conjunction with the Indian Act and British North American Act to attempt to assimilate Aboriginal people to a Western way of life. The Indian Act is a Canadian Act of Parliament that makes Aboriginal people wards of the state. It stripped Aboriginal people of their self-governing structures, such as the Potlatch, and put them on reserves under control of an Indian Agent. Most bands are now run by Band Councils, and have designates to work with the government and are now allowed to practice cultural practices again, but are still connected with the federal government. The loss of land, language, culture, and community has many impacts on Aboriginal people's ways of knowing and living. Before Residential schools, Aboriginal "societies had their own languages, history, cultures, spirituality, technologies, and values" (Truth and Reconciliation Commission, 2012, p. 7). The residential school system devastated Aboriginal ways of knowing by destroying the connection between generations, as "[t]he security and survival of these societies depended on passing on this cultural legacy from one generation to the next." (Truth and Reconciliation Commission, 2012, p.7). Aboriginal ways of knowing have been and are still impacted by the residential school systems. Education is the first step in self-determination and bettering conditions for Aboriginal peoples. Indian Control of Indian Education (National Indian Brotherhood, 1972) puts the control of Aboriginal Education in the hands of Aboriginal People. The way the knowledge is passed on still shows strength and resilience. The government of British Columbia is working toward reconciliation by shaping educational curricula to recognize, emphasize, and honour these ways of knowing. This reflects the policy of the First Nation's Assembly of the National Indian Brotherhood's call for Federal and Provincial Governments of Canada to designate control of First Nations

student's education to First Nations communities. The intent of the policy was to educate First Nations students so they could be “proud of themselves and the knowledge to understand the world around them.” (National Indian Brotherhood, 1972, p. 1). The document is organized into four sections for improvement in First Nations: responsibility, programs, teachers, facilities, and services. The ICIE policy was determined to give First Nations the two basic education principles other Canadian parents had over their child's education: “local control of education [and] parental responsibility” (National Indian Brotherhood, 1972, p. 5).

The National Indian Brotherhood (1972) recommended three ways responsibility for First Nations Education could be given to First Nations. Firstly, through local control, allowing First Nations parents a say in their child's education. Secondly, through school board representation, in which there could be a First Nations representation on each District School Board as well as representations within the schools. Finally, they recommended jurisdiction to be passed from the Federal government to local Band Councils and Educational Departments must include First Nations representation acting as a first party. Verna Kirkness (1999) states “curriculum must be structured to use the child's awareness of his own cultural environment as a springboard for learning about the outside world” (p. 9). Celia Haig-Brown (2010) notes that the challenge with the curriculum is that “it is the prospect of living with the contradiction of two worlds, which is at the same time one world” (p. 268). These contradictions between traditional epistemology and Western epistemology create conflict for Indigenous students and for teachers. The ICIE (1972) calls for curriculum development not only with local curriculum but with Provincial and Federal curriculum in which all Canadian students learn the history of Canada and First Nations. Kathy Bickmore (2006) discusses the vestigial and structural barriers that are still in place in education. The

curriculum is being edited by the governments and practicing teachers to remove these built in barriers. It is important how Canadians see First Nations people. The curriculum is a critical factor influencing this part of Canadian society. The ICIE (1972) advocated for First Nations Teachers as well as non-First Nations teachers to have training to understand and acknowledge the different worldviews.

Changes in Pedagogy

Changes are happening in B.C.: Myla Leinweber's (2013) thesis defense discussed the process of becoming an ally and helping another teacher feel more comfortable with Aboriginal curriculum. This is a necessary step to improve Aboriginal education, especially in urban environments. In Linda Goulet's (2001) comparison of two teachers of Aboriginal students, she emphasized the more effective teacher used a holistic approach, building relationships with the students and the context of their community, society and history. Marja-Iiona Kostia and Marc de Vries (2014) developed an education model to aid teachers in STEM (Science, Technology, Engineering, and Math) education. The three domains of their model for science education are: social context, concrete knowledge, and abstract knowledge. It is through this knowledge that a teacher can provide engaging and relevant lessons for students. Kostia and de Vries (2014) also discussed how their model can be used in professional development, exploring the experiences of a student teacher and an experienced teacher. Each teacher used the model to design lessons that contained and transitioned through each domain of knowledge. The teacher "stressed that by linking the domains and moving between them helped the pupils to understand the connections between concrete examples and abstract explanations" (Kostia and Vries, 2014, p. 190). All three domains of knowledge are needed in the design process. This model provides links between

concrete things and abstract theory, creating connections located in the student's social context. This concept of social context is not only found in STEM models, but is also the crux culturally responsive education models. Teachers are asked to understand the worlds in which their students live, and to embed local knowledge and philosophies in curriculum from an Indigenous perspective. Archibald (1995) explores the creation of a Sto:lo social studies unit which the community would use, but also share for non-Aboriginal students to learn from as well. Traditional Indigenous content in the curriculum alongside contemporary content both needed to be present to move the planning forward successfully.

Language is a critical component to be considered in any curriculum. Yatta Kanu (2002), in Integrating Aboriginal Perspectives into the Curriculum: Purposes, Possibilities, and Challenges, introduced the phrase "curriculum as cultural practice" (p. 69) placing "culture at the centre of curriculum analysis and reform [...and] to stress practice as an important context for these endeavours" (p. 69) meaning that the curriculum and pedagogies are the driving force of our teaching, and truly the way we are being colonized. If we start to use Indigenous ways of knowing to change the way we teach, we are moving towards decolonization. This idea is much like McLuhan's (1964) "medium is the message," (p. 5) and I think the curriculum has now been designed to emphasize and decolonized the process of learning and the skills students need instead of rigid content requirements.

Education models including Cornel Pewewardy's (1999) medicine wheel model for education change centre on teachings organized around the structure of the medicine wheel. The learner is in the centre, and then expands out to the four domains: mental, spiritual, physical, and emotional. The framework outlines instructional strategies that come from applying eight views on intelligences to the four domains of the medicine wheel. Pewewardy (1999) is not the only one using the medicine wheel as a way of connecting students and

content. Mary Annette Pember (2010) reports that twelve tribal colleges used the medicine wheel to organize an online course based on climate change. The twelve colleges collaborated and designed the course with climate in the centre of the wheel instead of self, and then moved outward to the four elements as related to the four sections of the medicine wheel. The colleges applied for a grant from American Indian Higher Education Consortium to increase Aboriginal student success in STEM education. Science education is based in Western philosophies, and this can be a barrier to Aboriginal student success in the STEM fields. This is especially troubling, as many land stewardship positions and opportunities require science backgrounds.

The connection between digital and cultural platforms provide access. One example is a virtual loom ("Math Connections", n.d.). This tool, or medium to interact with beading culture, is all digital. It quickly creates the layout of the beaded loom pattern. This is a very useful tool for design thinking when planning out bracelet design. Questions arise from making something that is a hands-on activity, and turning it into something intangible and digital helps make the practice of bracelet creation more accessible.

Holistic models examine relationship between items, people, and places. The learning comes from more than just making the item, but also from the history or connections the learner can make while making the item. Indigenous pedagogies and models are based on language and relationships to place, people, and ideas. As our teaching focus shifts more to skills over content, holistic models become increasingly important. Models centered around making in order to foster creative and critical thinking is not entirely new. Traditional Indigenous ways of teaching have often focused on mentorship, tangible practice, and location within a specific community. I see this when I look at Aboriginal pedagogies and teaching from my own Nisga'a mentors. The shift to the Maker movement helps

communities embrace responsibilities for the environment and the place they live, and helps bring people together. This is much like Indigenous pedagogies in which the member is "doing the things we do" (K. Tait, personal communication, July 27, 2017) for the community. Education is embracing both Aboriginal ways of knowing and finding the answer in Indigenous pedagogy.

Twitter

Twitter is a social media web based platform founded in 2006 by Jack Dorsey, Noah Glass, Biz Stone, and Evan Williams. The user can register and create a profile to start connecting with other users. They can post tweets, which were restricted to 140 characters up until November of 2017, before transitioning to 280 characters. The tweets can be read by unregistered users but can only be interacted with by other registered users. Twitter is an increasingly important way for people from all over the world to connect, including academic and artistic communities. The platform can be used to share a terrible pun or to ask a question about identity politics. This vast space and openness provides opportunities for community building, and a space for voices which are often marginalized in mainstream channels.

Twitter has been an especially useful tool for connecting Indigenous Voices. As AKU-MATU (2018) tweets "Our Ancestors giggle at this new technology of tweeting they make sacred ground in the twittersphere to connect as Nations here (Figure 1).

Figure 1. AKU-MATU tweet describing the relationship between Ancestors and technology (2018).

Twitter can create a sense of community that comes from sharing common experiences, not feeling alone when tackling Indigenous issues, or examining differing perspectives. It can be a space to create collaborations and opportunity to hold each other up. It is also a place where learning is happening; educators at many different levels and locations are on Twitter sharing their ideas for the new curriculum. Parents like Shawna Davis or as she's known on twitter @Hayatsgan can also comment on what their child is learning and join the conversation at their convenience.

Students can use Twitter to interact with academics in their field and pose questions to gain multiple perspectives. Charles G. Knight and Linda K. Kaye (2016) found that academics were mostly using Twitter to promote and share their own work; rather than engaging with students. This could be due to the new way of connecting social media and

academia and the phases of interaction on the platform. Just as people are trained to use phones and other technology, they can be taught how to use Twitter to engage in meaningful education, connecting them to a learning community.

Keeping the tweets in their original format provides for more of an authentic understanding. Once removed from the format and reduced down to characters, something is lost, much like how transcribing an oral story can lose the gestures and tone of the storyteller in the translation to another medium. Maintaining tweets in their original medium attempts to preserve the person's story and the context of their words as closely as possible.

Creating a Learning Community

Twitter, of course, has drawbacks; creating a space in which people don't have to engage with content but can comment easily with little to no accountability, referred to as "trolling". These comments and users are often recognized right away, and emphasize one of the more important lessons in online learning: validating a source. Using critical thinking skills to know whether or not to engage with the subject matter or the user is an important element of 21st century learning, and emphasizes the different skills needed in an information rich age. Students now have the information stored in their pockets and can be more connected than ever, but must be prepared with the skills to process and evaluate this information. 21st century learning is full of online platforms: coding and computational thinking (Making) are some of the new ways available for finding information and learning. The skills students need are changing because the process of gathering information has changed, as have the outcomes of education. Education is now leaving the factory model behind and moving towards a skill based constructivist approach that meets students at their own progress level and provides them with opportunities to learn skills and processes rather than simply absorbing predetermined content. Coding is one way that students can access

technology and not be passive consumers; they can make their own videogames and interact with technology.

Shift in Mindset

Culture is an ever changing thing, and the impact this has on both individual and collective culture shapes how teachers teach; both exist in the community and work together or against each other (Christopher, 1996). As one evolves the other has to adapt; our learners change due to cultural shifts, and so should our practice as teachers. The curriculum change reflects changes in collective culture, and also will have effects on our collective culture within the province of British Columbia. The shift in educational mindset to include more computational thinking and hands-on learning creates space for Indigenous ways of learning. More importantly, the change to the curriculum to include Indigenous content and ways of knowing into each grade level is necessary for making space for Indigenous peoples. All of these things together allow for Indigenous pedagogy to make its way into schools and start the conversation of reconciliation.

Chapter Three: Indigenous Pedagogy

When defining Indigenous pedagogy, I must acknowledge that there are many Indigenous nations and communities, and this term is not meant to define the ways in which all Indigenous peoples do things. Pedagogy is also an inherently Western word, of Greek origin, and I am using it to make space for and connection to Indigenous ways of knowing. Pedagogy is the theory and practice of teaching, and by using it in connection with the term Indigenous, I am defining Indigenous pedagogy as the way Indigenous peoples transfer their knowledge and teach in the community. Indigenous knowledge is held by people, and the way to transfer that knowledge is through watching, listening, and, most importantly, doing. Growing up, I have learned Nisga'a ways of knowing from my Nisga'a family members. This knowledge has come from being with my family members, and participation and observation during cultural events. It is in these moments and the time spent with people in the spaces between these moments that teaching happens and is ingrained in culture.

Indigenous ways of knowing are holistic, and are interwoven into many different things. It is through culture that we teach our community members how to live in the community and embody our culture. My understanding of Indigenous pedagogy is shaped by my mentors. Wal-laks (Keane M.T. Tait), a Nisga'a mentor, taught me the Nisga'a translate the word culture as, "Lip wilaa loom, the things we do to/for ourselves" (personal communication, July 27, 2017). It is in these things we learn, and it is how our family teach us Nisga'a ways and how to be a Nisga'a person. It is a holistic method of teaching in which many lessons can come from the same activity. Each time you take part in an activity you may learn a bit more about it or hear a different perspective on the story.

Jarring salmon is one of these activities that happens every year around the same time, and each person knows and does a job. These are taken on by a family, which can be a

nuclear family, but can also include extended family. The first lesson is that the fish will come when they come and everyone has to be ready. Once the fish arrive, they have to be cleaned, cut to size, put in the jars with salt, cooked and sealed. This process can be split up among a family, giving even the youngest child a job like filling the jars. Each job is important and all must be done. Each has their own teachings, and cycling through the jobs provides learning opportunities and chances to apply their learnings from each previous experience. The act of coordinating the process falls to the most reliable person who has the most experience. For my family, this was usually my late Jiits Elizabeth, and is now my mother or one of my aunts. Each person is learning how to preserve fish and store it for winter, but there are so many other lessons that come out of the moment, such as respect for food, the science of preservation, and the anatomy of a salmon. This communal experience also creates a space for storytelling, family connection, and intergenerational learning. Each nation and family may have particular ways of jarring salmon; I experienced this diversity directly when I presented Nisga'a methods of preserving fish to our students alongside those of Taltan and Dakelh colleagues for a Makerspace project.

The Feast Hall is also a major component of Indigenous knowledge and pedagogy. Once again the learner must be observant and reflective, but also an active participant. I cannot explain here all of the lessons learned in a feast hall, because some things are not meant to be shared. The teachings in a feast hall have many layers and contribute greatly to Indigenous knowledge and pedagogy. There are many teachers and also many opportunities to scaffold learning. Depending on which feast and what your wilp's role and responsibility is in the feast, the teachings spiral and layer onto each other with each experience. These are all influential to learning and being part of the community and culture.

Both salmon jarring and experiences in the feast hall place the learner with multiple teachers in a situation where they must be observant, reflective, and an active participant, all centering around respect. More work can be done to explain the specific teachings of Indigenous pedagogy. I will be focussing on beading a loom bracelet as part of this process of exploration. Indigenous pedagogy accommodates different types of learners and includes multiple lessons from one activity. The process itself influences how students learn: during these activities learners can be observant, reflective, or active participants, all in a respectful way. There are many people who can be teachers, and the teachings are not bound by time, meaning they come from the ancestors and are for future generations all at the same time, all anchored by place and people.

People are the holders of Indigenous knowledge because it is as Peter McKay taught me Nisga'a culture is a "living culture" (personal communication, June 29, 2015). We are weaving cedar to make things that we use, and each of these things reflects the spirit of the cedar tree that gave its bark to make the item. The many things we learn from a living culture not only include making and doing, but also from the process of learning. Indigenous knowledge is not like a book a learner can check out of the library, because it is living inside of people, and it survives because of the resilience of people.

I see a connection between Indigenous pedagogy and Marshal McLuhan's (1964) theory that the "medium is the message" (p. 5), because the message isn't solely the words we speak or the end product; it is the process. It is through the concept that the "medium is the message" (1964, p. 5) along with "Lip wilaa loom" (K.Tait, personal communication, July 27, 2017), and "living culture" (P. McKay, personal communication, June 29, 2015) that I define Indigenous pedagogy as learning by being and doing. Indigenous Pedagogy has many teachers, many methods, and many goals. It strives to teach people how to be a part of

their community. Indigenous pedagogy focuses on teaching in the space between people, which is culture.

Beading as Indigenous Pedagogy

Beading has been practiced by Indigenous peoples in what is now known as Canada for thousands of years, and has had historical, political, cultural significance. Beading is an Indigenous pedagogy that has been used by Indigenous cultures on both the East and West coasts of Canada. With the shift in mindset of education to include Indigenous perspectives and work toward reconciliation, there are examples of other beading projects being explored by educators. Beading is culture, and culture is happening in the space between people. This can be on the person to person level, person to community level, or nation to nation level. Beading can represent this connection, and, of course, like many other cultural practices, are dependent on which nation, community, or person is beading.

There are examples in which beading is integral to political and therefore historical nation to nation events. The Haudenosaunee Confederacy have wampum belts consisting of wampum beads made out of shell. Here the Haudenosaunee Confederacy (2018) state wampum belts were used for:

> official purposes and religious ceremonies and in the case of the joining of the League of Nations was used as a way to bind peace. Every Chief of the Confederacy and every Clan Mother has a certain string or strings of Wampum that serves as their certificate of office (para. 4).

The importance of identity and record keeping, and interpreting the wampum is part of the Haudenosaunee culture. Culture and politics are connected because an Indigenous worldview is holistic; the individual is linked to the community.

Other nations use beading as a way of communicating identity and history, I want to acknowledge that there are other ways of recording and showing identity. This is a central difference between Indigenous worldview and Western knowledge. It is through beading that so many cultural interactions happen, generating and recording cultural identity and history. Each Nation has its own history, meaning, and teaching in their beading, making beading a major medium of Indigenous pedagogy.

In a tweet from one of my teachers, my cousin, Shawna Davis, she makes a connection while beading to her grandmothers and the land that surrounds them, all demonstrated through beading. Beading can show connection to people and place. @Hayatsgan (Davis, 2017b) shares her learning from Gwich'in relations and the connection to place and family in Figure 2. The connection to grandmothers, links to a matrilineal society, and the imagery of wildflowers surrounding them provides so much more context for beading and the meaning behind it.

Figure 2. @Hayatsgan (Shawna Davis) tweets about the grandmothers that have been beading and the continued connection with the land (2017b).

Others have taken beading into education projects in which they explore mathematics curriculum, as well as create space for Indigenous ways of knowing and learning into the classroom (Beatty & Blair, 2015) by exploring the patterns involved and connecting them to mathematical patterns and concepts. This allows for students to have authentic and emergent

learning experiences, as each can approach the lesson from their own perspective, creating inclusive outcomes.

One mechanism for creating space and tools in the digital world is the digital loom, which provides an accessible cultural platform. An example is the virtual loom available at: https://beadloom.weebly.com/math-connections.html. This tool or medium to interact with beading culture is entirely digital, and quickly generates the layout of the beaded loom pattern. This accessibility supports student interest and exploration of beading. Lana Ray (2016), an academic from Lakehead University, is exploring beading as research, method of inquiry. She argues that the act of beading demonstrates "the values of respect, balance, harmony centeredness, and repetition that are present within the process and aesthetic of beading" (p. 372). Starting with Indigenous practice and seeing what lessons and learning emerge can provide information that is directed by culture more than by our inquiry. Centering processes rather than information gathering and content delivery can aid in research and education. Beading is a process which is accessible and can provide teachings to expand outside the classroom, as @Hayatsgan (Davis, 2017c) says "each bead carries you, shares you, helps you learn medicine" (Figure 3).

Figure 3. @Hayatsgan (Shawna Davis) tweets about beading as medicine (2017c).

I would like to take a similar approach to education as researchers have taken to methodologies because I see research and learning as the same thing. As a researcher you are asking a question and seeking an answer. The same can be found in education, at any level, whether it be student, teacher, administrator, or even at the district level. We are all continually learning and adapting to new challenges, and we are often using storytelling as a way to teach and often have to examine multiple perspectives. I have taken my own experiences and tweets from @Hayatsgan (Davis, 2017) and her beading journey. @Hayatsgan's (Davis, 2017d) reflection on her beading started with her first tweet in the thread (Figure 4) to build this beading framework, in which each bead signifies a teaching that is learned while beading a Beaded Tweet Bracelet. The teachings are for both student and the teacher to help integrate Indigenous content in the classroom, working towards reconciliation.

Figure 4. @Hayatsgan (Shawna Davis) shares her beading journey (2017d).

Chapter Four: Framework, Beading as Learning

The beading framework consists of eight concepts which can be connected to the lessons in the unit plan, all of which are expansions of core competencies. Much like the Nisga'a perspective of the individual as self, family, wilp, clan, community, and nation, this framework can be expanded beyond the lesson plans and into guidelines for educators working to integrate Indigenous worldviews in the classroom. This framework is based in my own learning, teachings from Rhonda Pierreroy, and tweets from @Hayatsgan (Davis, 2017). @Hayatsgan is a Gitsxan woman who sharing her learning from beading. She is not using a loom, but started out using the style of the Gwitch'in with who she has family connections. Her learning very much reflected my own journey of learning to bead on the loom. I found myself discussing the same teachings with students and my friend Rhonda Pierreroy while she was teaching me to loom bead. These teachings come from Indigenous people and reflect Indigenous pedagogy that can be shared with our present day learners. Using both personal connection and mentorship as well as tweets, I have created a framework for my unit plan that integrates both the new curriculum and Indigenous ways of knowing. Providing guidelines to educators will help integrate Indigenous worldviews into the classroom.

This contemporary framework focuses on students being observant, reflective, and active participants in their learning, and can be connected to some of the core competencies and computational thinking elements in the new Applied Design, Skills and Technology curriculum. Beading is a process is centered on self-reflection similar to the outcomes and assessments included in the new provincial curriculum, and this framework guides learners through this process. The process, and not the end product, is the central form of learning; or as Marshal McLuhan (1964) says, the "medium is the message" (p. 5). The eight concepts are depicted below as beads connected by needle and thread, and I will further expand the

connection these concepts have in Indigenous pedagogy as well as how these concepts exist in my own learning and the intended learnings for students.

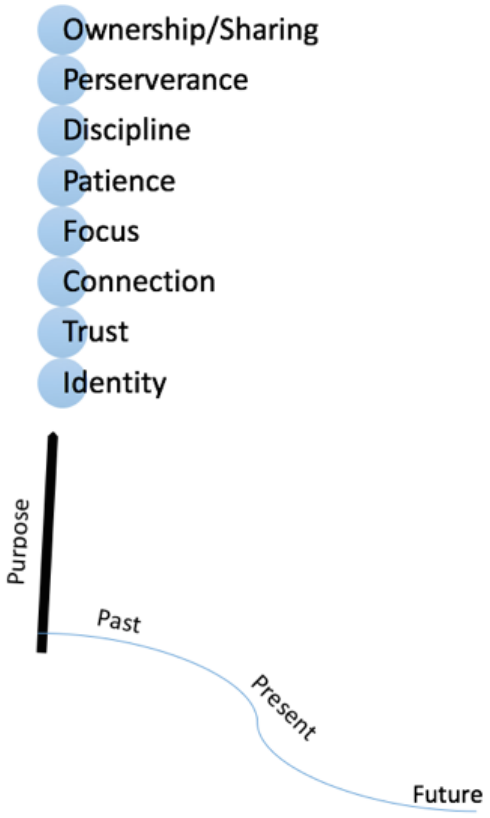


Figure 5. *Beading as Learning, Framework for Beaded Tweets*. © Noelle Pepin, 2018, All rights reserved. This image may not be reproduced in whole or in part, by photocopy or other means, without the permission of the author.

The Needle Sets the Purpose

The needle is the purpose that brings all of the teachings together. The order of the beads can change depending on where we are in the bracelet and what message we are beading. This is true when thinking about student learning or incorporating Indigenous content into our lessons. The intentions are one of the most important things to state because each participant approaches from their own perspective. Western and Indigenous thought come from different places and worldviews and this can often result in Non-indigenous researchers misappropriating knowledge because of their location in Western discourse

(Haig-Brown, 2010). This is why intentions must be made clear. What are you asking about, what will you use it for, and who do you expect to share it with? Stating the intention of your work is key to a process of reconciliation; each person has a different point of entry and a different story to share in the conversation. The student must understand why they are learning something, and from my experiences with the new Maker style of learning, if the student clearly states their intentions it is easy to accommodate the change, which allows for meaningful emergent learning. If the student is clear and honest in approaching these bead teachings, they will have a more meaningful experience. The student can be observant, reflective, and active participant in their education, taking advantage of the opportunity.

The Thread that Connects Us

The thread symbolizes time; past, present, and future. Educators must acknowledge all three when working to integrate Indigenous worldviews into their classroom, and also when understanding where the student is in their learning. One of the issues that occurs when beading is the thread getting tangled, which symbolically occurs when the student forgets which stage they are on, or the teacher has incorrect expectations and assumptions about the student and the cultural content of the lesson. The past, present, and future of the learning are always present and ongoing.

The temporal element is important in Indigenous knowledge; stories and lessons often transcend time or are a way of recordkeeping. Indigenous stories are not meant to be categorized according to time; they are meant to transcend time and connect more with location (Kovach, 2009) adding to the interconnectedness of everything. A non-linear view of time can be seen in the thread: as it goes back and forth, it strengthens the learning and connections between the teachings, almost like a spiral. If learning is rigidly compartmentalized, we are taking a more Western view toward Indigenous knowledge,

whereas knowledge in Indigenous worldviews is more holistic and interconnected (Battiste & Henderson, 2000; Cajete, 2000; Little Bear, 2000; Wilson, 2008; Kovach, 2009). The clash between Western views and Indigenous knowledge can be bridged through examination of the past, present, and future of Indigenous knowledge, as well as Western perspectives on Indigenous Knowledge. Through this examination and exploration, teachers can feel more comfortable about approaching using Indigenous knowledge and ways of knowing in the classroom. When considering time, we must examine the past, present and future role Canada's collective history has in shaping cultures, learners, and learning environments. Improving education for Indigenous students and providing space for all learners is part of the reconciliation process. The thread symbolizes the spiralling of time through past, present, and future, connecting our teachings and experiences and creating these opportunities for reconciliation.

The thread holds together the beads that represent various teachings, and these are strung in the pattern explored in detail below. I chose this pattern to guide students and teachers through the process of integrating Indigenous knowledge, but I acknowledge that people will begin the learning process at different stages, and may find another pattern more facilitative of learning and reconciliation.

Identity

Identity is my first teaching because it is in the way I have learned to introduce myself. First, I would state my name, clan, and wilp. Self-Location is used by Indigenous researchers, and is important in Indigenous methodologies, because it immediately provides that context when working with Indigenous communities Kovach (2009, 2013). This originates in Indigenous practices of introducing yourself by saying where you come from

and to whom you are related. Acknowledging where you come from is acknowledging your family and teachers who have come before you.

When approaching Indigenous content, the learner and teacher must first start with a strong understanding of their own connections before they can start to interact with other ways of knowing. Identifying who they are and their relation with the material is integral to incorporating Indigenous ways of knowing in the classroom. Those who feel they are lacking in some understanding can reach out by identifying themselves and their intentions.

Building a strong identity is a goal for Indigenous students, and we must start working towards Verna Kirkness's (1999) recommendation, "Curriculum must be structured to use the child's awareness of his own cultural environment as a springboard for learning about the outside world" (p. 9). Curriculum changes intended to reflect all learners are positive steps towards reconciliation. The beaded tweet is linked to the student's learning as well as allowing them to create a personal message. Allowing student choice creates an opportunity for the learner to showcase their identity. The student is also becoming more self-aware as they explore their own learning in relation to the beaded teachings, of identity, trust, connection, focus, patience, discipline, perseverance, ownership and sharing. This is demonstrated in my own learning process; like @Hayatsgan (Davis, 2017) reflected on her learning, I did as well. It is through this reflection and encouragement to embrace my identity and my ideas that I was able to connect loom beading and binary code. Rhonda Pierreroy also encouraged the students and I to design our own patterns, and truly make the bracelets our own

Trust

Trust is built from sharing your identity and intentions. This is often done when acknowledging traditional territory and Elders of the community, demonstrating

understanding of being a visitor, and making the intent of the visit clear. This is also applicable when talking about Indigenous knowledge; the elder who is often the holder of the knowledge will tell where they learned the story, effectively citing their sources, while also creating a temporal connection between these sources and the learner. This acknowledges that the act of passing down the knowledge is as important as the knowledge itself, and that acknowledging the source of the information creates trust.

Haig-Brown (2010) examines the way people think and the act of knowledge appropriation; how Non-indigenous researchers can misappropriate knowledge because of Western ways of thinking, so we must understand that sharing of Indigenous knowledge is not a given. Some things are not to be shared and also there may have been some misuse or misunderstanding previously with Indigenous communities, and sharing without misappropriation can only exist in an environment of trust.

Dr. Marlene Atleo's (2009) study of Inter-generational transmission of knowledge structures focused on Nuu-chah-nulth Elders examination of the Umeek narrative, a traditional story of the first whaler. The Elders identified important themes in the narrative, as well as eight traditional types of learners or leaders, demonstrating the ability for the story to relate to a diverse community of learners. This article demonstrates how Indigenous knowledge can be used to influence change toward reconciliation, as well as be translated to another context with good intentions and appropriate protocols. These difficult conversations to work towards Reconciliation and using Indigenous content require the existence of trust between Indigenous and non-Indigenous teachers and learners. Trust on the individual level of this framework is one of the central teachings. Learners to trust themselves to know what to do. @Hayatsgan (Davis, 2017e) speaks about trusting your skills and your creativity and to continue even when you doubt yourself (Figure 6).

Figure 6. @Hayatsgan (Shawna Davis) trust in your abilities, skills and creativity and continue through doubt (2017e).

When I am beading, I am often trusting that I have the needle running through the correct position on the loom. A misplaced needle will result in a dropped bead, but once you feel comfortable you can trust that you have done it correctly. This was not always the case when I started, much like anything new you approach, and you must trust that your ideas change and evolve as you learn new things. Trusting in your skills and writing is also very important to completing a Masters project. I relate so much to this teaching in many instances in which I wonder if I am doing the right thing. Trusting in your ideas and the message you want to communicate; trusting it is the right message and belongs in this context is very important in reconciliation. Students will learn similar things as they grow more confident in their coding and in their beading. It is a process that is repetitive and iterative, creating opportunities to improve muscle memory and recall. Students may learn binary code so well that they can decipher messages with little to no use of a key, trusting their memory. Students are also trusting that they are meant to make this bracelet and trusting in the importance of the message, learning about dropped beads and the importance of trusting their skills.

Connection

Connection is everything when approaching Indigenous knowledge. When introducing myself I work my way outward from self, wilp, clan, nation. The information I share connects me to people and place at any point in time. I am connected to my ancestors

of the wilp Ksdiiyaawak, and the lands and responsibilities that go along with that wilp. These also describe adaawak, which is knowledge held by a wilp.

Each wilp has a Sim'oogit, who is in charge of their traditional lands and who also manages resources so their people can survive and prosper. The resources, for example, smoked salmon, would be shared during the winter when the feasts would happen, which had been prepared for all year (Boston *et al.* 1996). These feasts would be for marriages, settlement of people who had passed on, and naming feasts. A person's name was passed on from early ancestors, and great chiefs would have great power and responsibilities that came with a more prominent name. The names were attached to the land and crests and adaawak. Adaawak is oral tradition, which can be expressed many ways, including art such as totem poles, traditional dancing, a walk through the woods with and elder, or a traditional story of how the Nisga'a were created. There are so many connections to people, place, land, and ancestors all explained when I introduce myself. Indigenous knowledge itself is an expansive network of relationships, interactions, observations, and practices of a physical, emotional, and spiritual nature; focusing on the interconnectedness and holistic nature of a local area (Archibald, 2008; Battiste & Henderson, 2000; Battiste, 2013; Catjete, 2000; Little Bear 2000, Smith, 2000).

The conflict between Western and Indigenous knowledge; or the curriculum and Indigenous ways of knowing come from the compartmentalization of learning. Indigenous stories are not meant to be categorized by one variable (Kovach, 2009). In Harris *et al.* (2010) Elder Murdena Marshall shares a part of a Mi'kmaq teachings meant to combine both Indigenous and Western content. From a line in the story, “The sky will always be there. You are part of the sky when you are on Earth. It is a part of your everyday life. The sky is alive and demands respect from you.” (Harris et al., 2010 p.16). Elder Murdena Marshall expresses

that the use of the present tense is meant to reinforce the concept of circular time and that these topics are relevant to modern times (Harris *et al*. 2010). This story makes me think of reconciliation. It is meant to combine both Indigenous content and be accessible to all because of its use of the present tense. The connection between land and sky is important because it emphasizes the lack of borders, and both demand respect.

Teachers can show respect for Indigenous knowledge by not attempting to limit the content to one subject, and also by not pulling cultural practices out of context solely to meet their curriculum objectives. There are holistic teachings and history linked to each practice, and it's best to explore those alongside considering how it could relate to a curriculum outcome. Teachers should try to work with a knowledgeable person to start to explore Indigenous content and see what curriculum competencies emerge from this process. If teachers are using Indigenous content without this context, they are more likely to only see it from a certain perspective, limiting the Indigenous knowledge and the experience of the learners.

As we find common ground through spaces like Twitter, we can make connections with other educators and knowledge holders, and as AKU-MATU (2018) tweets, the ancestors will giggle as they find space to connect in the twittersphere (Figure 1). @Hayatsgan (Davis, 2017f) has made clear that beading connects you, grounding you, allowing you to think of the land and water that provides you with life (Figure 7).

Figure 7. @Hayatsgan (Shawna Davis) shares how beading can connect you to land, water, and life (2017f).

Her tweet mentioned earlier is also about connecting to grandmothers (Figure 2), emphasizing the importance of connection to family and to traditional territory, through the wildflowers that surround them and connect between generations (Davis, 2017b).

My learning comes from how I identify myself and how I've connected with my colleagues in the interior to share with me new things. The connection I find with other Indigenous people on Twitter and Instagram; being able to learn from people; location is not as limiting anymore. These lessons about connection to people and place are important for students as they are beading. My first group of students all chose to make a bracelet about their mothers, to share where they came from. Beading can make connections between people, and it can be used as a check-in activity because as a time to reflect.

Focus

Focus is integral to the Indigenous pedagogy; to be an observant, reflective learner one must focus. Learning by watching and doing requires focus, and this focus allows for the learner to start at their individual skill level and improve with experience. The same focus is necessary for reconciliation through education, which must be a continuous process. Each step and each conversation we have must be focused on moving forward.

Teachers can continue to learn as they focus on Indigenous content through the beaded tweet lessons, as the bead teachings build upon each other. Those who have not

grown up with these teachings should focus on this process and take time to reflect on the development of their own understanding, which will improve over time, just as the beading skills of their students will develop. As @Hayatsgan (Davis, 2017g) stated (Figure 8), put things aside and bead. Allow time for clarity.

Figure 8. @Hayatsgan (Shawna Davis) tweets focus, to set things aside and just bead (2017g).

Students face challenges and stresses teachers may not be aware of, and allowing them time the same opportunity to put things aside and just focus on the mechanics and process of beading helps create a calming and reflective environment. This experience, and the sense of accomplishment the finished project provides is an incredibly important lesson for students.

Patience

My learnings of patience come from observing my Jiits Elizabeth, who was the Sigidim Hannak of our wilp. A Sigidim Hannak is one of the leaders of the wilp, who is a teacher, leader, and politician. She assists in teaching the future leaders of the wilp, and is responsible for making decisions that are crucial for the wilp, including selecting the Sim'oogit (Chief) of the wilp. This role requires diplomacy, counselling skills, and political knowledge. She was quiet and patient with all her grandchildren. People would seek her out and she would not rush her decisions. Her patience while baking bread and jarring salmon provided a time for story and connection.

As part of reconciliation, Indigenous people are practicing patience more than ever. We are accessing platforms to share our messages and inviting people to the conversation. The new curriculum is a venue for reconciliation, but it cannot be rushed, and protocol cannot be ignored. Educators must be patient when trying to access Indigenous knowledge, and respect that it is not in a format that matches with the curriculum. Indigenous knowledge comes from people and educators must respect that it takes time and patience to connect in a respectful way.

Students creating a beaded tweet bracelet will have their patience tested. The time they are investing into this project will be significant. They must take the time to choose their message wisely. Creating the pattern and then beading the tweet will take time, and students must be patient in order to finish the bracelet. @Hayatsgan (Davis, 2017h) found that she was spending hours beading, and the first bracelet will always take the most time (Figure 9).

Figure 9. @Hayatsgan (Shawna Davis) tweets about patience; willing to sit and focus for hours upon hours as you bead (2017h).

Discipline

Discipline to commit the time and effort to train yourself to do what is needed. The example of jarring fish comes to mind while learning discipline because when the fish arrives everyone must do the job until its done. The discipline to work until the job gets done is integral to Indigenous pedagogy because it is based in action; learning by doing.

Reconciliation is a difficult conversation, and it must be acknowledging that each party entering the conversation must have the discipline to think clearly before they speak. Participants also must have the discipline to listen, even when they have the impulse to speak. There are times to talk and times to listen in the conversation of reconciliation, and all parties must be respectful of this process in order to create spaces where reconciliation can occur.

Students making a beaded tweet bracelet will need to find time to sit and bead whenever possible, just like @Hayatsgan (Davis, 2017i, Figure 10). While making something you cannot rush it because you must be in a good place.

Figure 10. @Hayatsgan (Shawna Davis) tweets about discipline in beading (2017i).

Having the discipline to stay clear-minded and work at a steady pace will allow students to benefit from their focus. Educators must also demonstrate discipline, and the ability to listen, in order to create space for their students to learn and participate in the process of reconciliation.

Perseverance

Survival and resilience are core components of Indigenous pedagogy, and perseverance is key to Indigenous education in Canada. The perseverance of ancestors meant that I am here right now. Perseverance is necessary to survive and succeed in systems that are often hostile. Reconciliation will come from persevering with the conversation even when it

is difficult. Students face challenges every day, and we need to give them the opportunities to practice and develop perseverance so they can apply it in other areas of life.

We have done this by scaffolding our Maker projects in @IDIGital_space to build up to longer projects, which has given students the communication skills and confidence to continue to work on a multi-week project. This can be seen in the beaded tweets unit by using the smaller scale pony beads to start and building up to the more complex loom beading. The scale of the project requires multiple sessions which provide opportunities for reflection on the progress and learnings from previous sessions.

Sa'aamhl wilin- Keep up the good work; keep learning and growing. As my Nisga'a name indicates, I am always learning, and as educators we are all part of this process as our students change and our curriculum adapts. @Hayatsgan (Davis, 2017j) tweets her pledge to continue to learn from her beading (Figure 11).

Figure 11. @Hayatsgan (Shawna Davis) giving thanks to her teachers and wanting to continue to learn from beading (2017j).

Beading can teach so many things and each time can be different. When I was learning to bead I noticed that I had to make time to bead, and to keep going after I had made a mistake. I noticed after about thirty rows that I had made a mistake and skipped a letter, and I had to take the needle off and remove all of the rows I had completed after the mistake. Then I started again. I observed students who were learning to bead would also make a mistake, most often tangling the thread or missing part of their pattern. This would often be a

moment in which they wanted to quit, but Rhonda and I would remind them that we could fix it and they could keep going. If they could persevere, they could still complete the bracelet, even if they had made mistakes in the process.

Ownership/Sharing

Once again I am reminded of introducing myself and the connection to adaawak. Each wilp has a Sim'oogit in charge of their traditional lands and management of resources. A Sim'oogit is seen as a high ranking individual but they obtain that by being the most reliable person in their wilp, and they would strengthen their name by having witnesses at their feasts. This model of ownership is how we give thanks to the teachers and share what we can with others.

It is through this complicated relationship with knowledge holding and sharing that we can approach Indigenous content in the classroom. Recognition that not all things can be shared or taken out of context is a step towards reconciliation. When knowledge can be shared, credit must be given to the knowledge holder who is responsible for holding and sharing the knowledge. It is very important to share in the right way, meaning the way the knowledge holder wants to share; stating intentions early to avoid miscommunication. @Hayatsgan (Davis, 2017k) acknowledges her teachers from the Gwich'in nation (Figure 12). I acknowledge @Hayatsgan (Davis, 2017) and Rhonda Pierreroy for teaching me about beading.

Figure 12. @Hayatsgan (Shawna Davis) giving thanks to her Gwich'in teachers (2017k).

Students will be sharing their message and why it is important by posting it to Twitter and tagging @Beaded_Tweets. This step of the project is very important because it allows for the student to share their work, learning to share and interact with others who have shared experiences. This also demonstrates the cyclical nature of the process of translating from computer code into physical artifact, and back into digital form.

Celebration and congratulations are in order for the students who complete their beaded tweet bracelet, because it is a long process and they have likely faced and overcome many challenges. Jax niin - good job. I would have never made it through without the encouragement and guidance of Rhonda Pierreroy. It is through her and other teachers in my life that I have been able to share this project. The learnings that accompany beading are just as important as the beaded tweet bracelet, which exists as the physical representation of those learnings.

Chapter Five: Beaded Tweets Unit

This unit includes step-by-step lessons demonstrating how students can make a beaded tweet bracelet. Through this process, students reflect will reflect on their learnings from working with beading and computer code. Students will be introduced to Indigenous teachings through the beading foci. The bracelet itself is the introduction to coding language and is made of two different colours of beads meant to represent the 0s and 1s in binary code.

"8 bead language" is where each bead represents a bit and a row represents a byte, or letter. This tangible way of expressing of digital code takes what was only digital, like a 140-character tweet and makes it physical. An example is featured below; the message is "Nusdeh Yoh is awesome. Every kid should go here. It's beautiful DB" (Figure 13).

Figure 13 First Beaded Tweet Bracelet: Reads in 8 bead language, "Nusdeh You is awesome. Every kid should go here. It's beautiful DB".

Connections to the Curriculum

This unit is designed to bring both traditional and contemporary content and issues together into the classroom, while allowing the student to put their own personal message together and reflect on their own learning. The unit gives tangible and specific ways of exploring Indigenous worldviews in the classroom. There are also cross-curricular connections with Applied Design, Skills and Technology (ADST), Oral language, Reading and Viewing, Mathematics and Social Studies. The project uses B.C.'s grade 6 curriculum, but is not limited to that grade level.

The Beading framework can be connected to the core competencies, which focus on the process of learning for each student. The student is at the centre, focusing on Communication, Creative Thinking, Critical Thinking, Positive Personal and Cultural Identity, Personal Awareness and Responsibility, Social Responsibility (B.C. Ministry of Education, 2016). Each of these competencies have profile descriptions, so the student and teacher can assess which profile best suits the student at that time. Students and teachers will be working toward the learner being an observant, reflective, and active participant in their education. The goal is not only the end product, but the process of learning itself.

Lesson Objectives and Formatting

Each lesson in the Beaded Tweets unit has a beading foci from the Beading as Learning framework (Figure 5), and connections to B.C. curriculum. The lessons are formatted for use by educators, and may not have the same formatting as the rest of the document. The objective for this document is to function as a resource for educators using the B.C. curriculum, or educators wanting to integrate Indigenous content. The outcome drawn from the curriculum are Grade 6 outcomes, but the lessons are applicable to students at other levels, and I hope that educators can find connections to their subject matter not

specifically outlined in these lessons. The Beaded Tweet Bracelet Unit incorporates computational thinking, social-emotional learning, art, media studies, and Indigenous content. Table 1 outlines the beading foci, lesson objective, and topics that can be covered.

Beading Journal

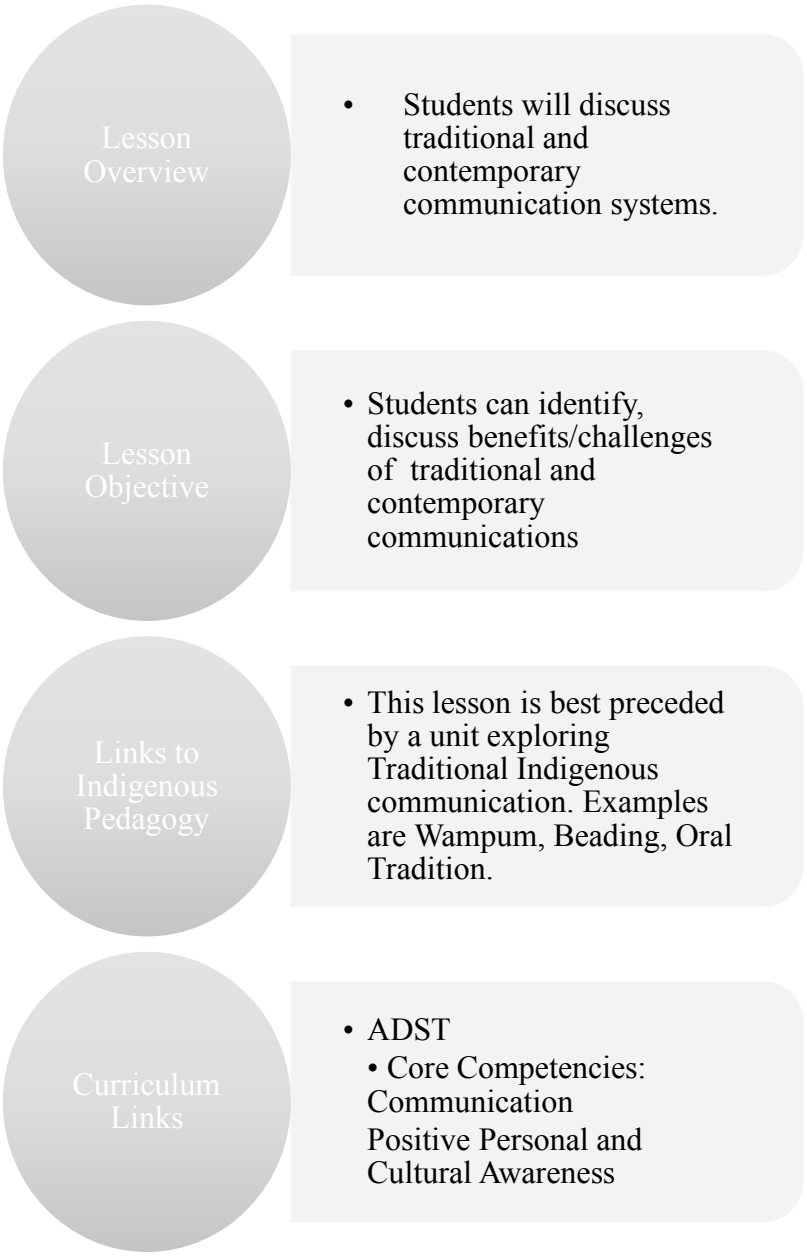
The Beading Journal is an assignment to have the learner (whether they are student or teacher) reflect on the process of beading as well as learning computer code. Participants will make entries throughout the unit. I recommend allowing the student to personalize their journal format, encouraging creativity and individuality. The journal could take the form of a drawing book, notebook, twitter account or scrapbook. The focus of this assignment is to give students a place to keep track of their learning throughout the lessons. Educators can have the students focus on the core competencies as well as the beading foci. The beading journal is a tool for reflection and to aid in the student becoming an observant and active participant in their learning.

Table 1 Beaded Tweets Unit Outline; each lesson has a beading foci, overview and objectives as well as topics.

Lessons	Beading Foci	Overview and Objectives	Topics
Communications: Traditional Contemporary	Trust (SD) Identity (CC)	Acknowledgement of knowledge and teachers Personal Location Oral Tradition Visual ways of communicating Physical Networks Digital Networks	Acknowledging where your learning came from… Locating yourself in relation to your learning Traditional and Contemporary Communication: Oral Tradition, Poles/Crests/Dance (Northwest Coast) Wampum Belts Beading
Twitter	Connection (SD)	Students will explore twitter; the benefits and challenges. Benefits/challenges for Indigenous communities and artists.	Digital Identity Digital Communication Indigenous Twitter
Coding (Binary and ASCII)	Focus (SD)(RP)	Students will learn how ASCII and Binary code are used and how to translate to and from each code.	Digital Literacy Applied Design, Skills, and Technology Mathematics: exponential growth
Set A Purpose	Trust (SD) Identity (CC)(RP)	Students choose what message will be on their beaded tweet.	Learning Intentions Communication
Design	Patience (SD)(RP)	Students will translate their message using binary language on the planning sheet.	Pattern Binary Code Computational Thinking- Design and debugging
Setting up the Loom	Discipline (SD) (RP)	Students setup the loom.	Digital loom
Beading	Perseverance (CC) (RP)	Students will start to bead their bracelet facing challenges at first but learning how to fix and move forward from	Beading Technique and reflecting on their purpose for the bracelet. How to ask for help. How to deal with frustrations.
Finishing the Bracelet and Posting to Twitter	Ownership/ Sharing (CC) (RP)	Telling their story of the beaded tweet. Reflecting on their learning.	Celebration of learning. Starting a new conversation. Adding to the conversation

(CC) Core Competencies, (SD) @Hayatsgan Tweet (Shawna Davis), (RP) Rhonda Pierreroy

Lesson One: Communication



Introduce the topic of communication.

- Does anyone know what communication means?
  - (Communication is imparting or exchanging information or news.)
- Does anyone have an example of communication?
  - (Examples Phone, Internet, Conversation, Newspaper, Snapchat, Instagram, Twitter…)
  - Before we continue the discussion, have students describe who they are, where they come from, and what they know about communication. This is called self-locating and explain that it can help others understand their perspective.
- What do these contemporary and traditional mean?
  - Traditional: A passed-down practice that has been long-established within a group or society

    - Contemporary: belonging or occurring in the present.
- Next, brainstorm more ideas about how different generations communicate.
    - Sort your ideas into categories of traditional communication and contemporary communication. (This can be done on the board or with note cards and hula hoops.)
- How do these concepts of traditional, contemporary, and different generations affect the way we communicate?

Have students make an entry in their beading journal introducing themselves, and writing about communication and their identity. Self-locating themselves before they start the project.

Beading Foci

Identity.The beaded tweet is linked to the student's learning as well as allowing them to create a personal message. Allowing student choice creates an opportunity for the learner to showcase their identity in the bracelet message, but also the beading journal is key for engagement and true self-reflection. The student becomes more self-aware as they look at their own learning in relation to the beaded teachings, of identity, trust, connection, focus, patience, discipline, perseverance, ownership and sharing.

Trust is another beading foci in which the learner has to trust themselves to know what they are doing in order to move forward. @Hayatsgan (Davis, 2017e) shares this teaching she has learned from beading (Figure 6). This is especially connected to reflection and being an active learner. Students will demonstrate self-confidence when they trust in their abilities.

Trust is also needed when engaging in conversations about reconciliation or other difficult issues. You need to establish both trust and a sense of identity when dealing with Indigenous content, because you need to understand the perspective of the provider of information, much like checking sources on the internet.

Trust on the individual level of this framework is one of the teachings to trust yourself to know what to do. @Hayatsgan (Davis, 2017e) speaks about trusting your skills and your creativity and continue even when you doubt yourself (Figure 6). The students will learn similar things as they grow more confident in their coding and in their beading. It is a process that is repetitive, creating opportunities to create muscle memory and recall. Students may learn binary code so well that they can decipher messages with little to no use of a key, trusting their memory. Students will also trust that they are meant to make this bracelet and the importance of the message they have selected, and they will learn to trust their skills as they learn about dropped beads and how to correct mistakes.

Applied Design, Skills, and Technology Curriculum:

Curricular Competency*:* Identify how the land, natural resources, and culture influence the development and use of tools and technologies

Core Competencies: This lesson makes connections to the core competencies communication and positive personal and cultural awareness.

Communication: Acquire, interpret, and present information (includes inquiries)

I can understand and share information about a topic that is important to me.

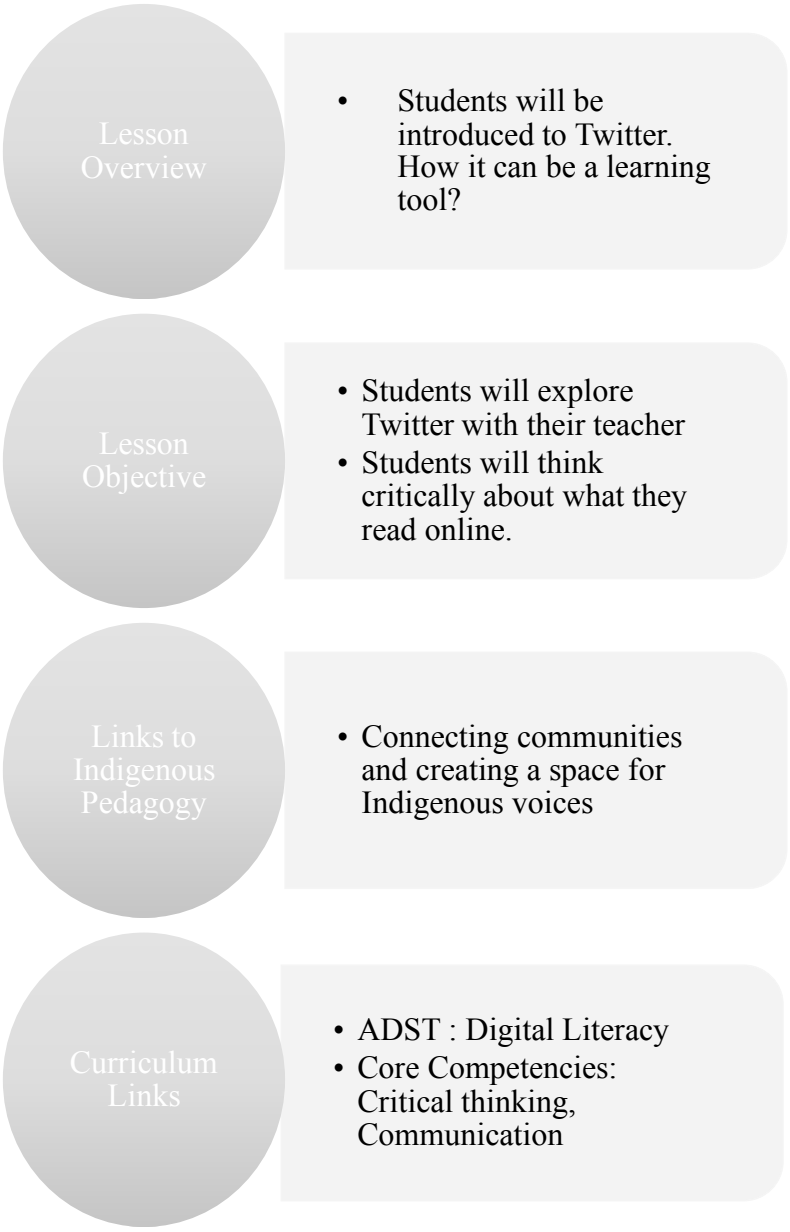
I present information clearly and in an organized way.

I can present information and ideas to an audience I may not know.

Positive Personal and Cultural Awareness: I understand that my identity is made up of many interconnected aspects (such as life experiences, family history, heritage, peer groups).

I can tell what is important to me.

Lesson Two: Twitter



Introduce the students to Twitter as a learning tool. Twitter can be a way of finding information or voices that may not be represented in other media forms.

- What they know about Twitter?
  - Twitter is a social media micro-blogging service where users can communicate through messages of limited character length called tweets.
  - Multiple tweets linked together are called a thread, which are like essays constructed of tweets. Twitter is available to use on a mobile app or on an internet browser.

Twitter can be related to many topics in the curriculum, but the focus here is on the topic of Indigenous voices and beading. Twitter is a social networking service and has some policing but their rules are not the same as school appropriate rules, so make sure to pre-screen the tweets you would like to share. Prepare students for discussion around difficult

topics if you choose to pursue. The following accounts would be good to explore and choose specific tweets that connect to the content for discussion. I highly recommend finding local Indigenous voices to localize this lesson. It is important to emphasize local communication as well as global communication in the Twitter network.

- @indigenousbeads This account has a different host every week share their projects and processes, and connects to other Indigenous beaders. https://twitter.com/indigenousbeads?lang=en
- @hayatsgan is a Gitxsan woman who is sharing her beading projects as well as her opinions on political issues. She shares personal stories and demonstrates some of the protocols linked to Indigenous practice. She is living with cultural knowledge and sharing her learning on twitter. https://twitter.com/hayatsgan?lang=en
- @INDIGital_space is Nusdeh Yoh's (Aboriginal choice school in Prince George) Makerspace twitter account, where teachers can share the projects students are working on and the learning and connections to Indigenous cultures. https://twitter.com/indigital_space?lang=en
- @Beaded_Tweets is the account which this project is based around. Here students can see examples of the finished project, and the messages others have chosen for their beaded tweets. https://twitter.com/Beaded_Tweets

Indigenous Beading Discussion Questions:

- What are Indigenous artists saying about their beading?
- What are they beading?
- How are these things linked to culture?
- Do they share how beading makes them feel?
- How would you know about these voices without Twitter?

Communication Discussion Questions:

- How would the restriction of characters affect how people communicate?
- How would it change how people are viewing content?
- How can it be used as a learning tool?
- What are the benefits?
- What are the drawbacks?

Discussion of Online Presence: Twitter is a social networking service that is inclusive. It is important to learn the skills to determine the context and intentions of the post.

Students can make an entry in their beading journal about who or what they feel a connection.

Beading Foci

Connection @Hayatsgan (Davis, 2017f) has made clear that beading connects you, grounding you, allowing you to think of the land and water that provides you with life (Figure 7). These lessons about connection to people and place can come up for students as they are beading. My first group all chose to make a bracelet about their mothers. They wanted to share where they came from. Beading can be an activity that makes connection between people, and it can be used as a check-in activity because it is a time to reflect.

Applied Design, Skills, and Technology Curriculum:

Identify how the land, natural resources, and culture influence the development and use of tools and technologies.

Digital Literacy: Internet safety**,** Digital self-image, Legal and ethical considerations, Cyberbullying, Identifying personal learning networks.

Social Studies Curriculum:

Media sources can both positively and negatively affect our understanding of important events and issues.

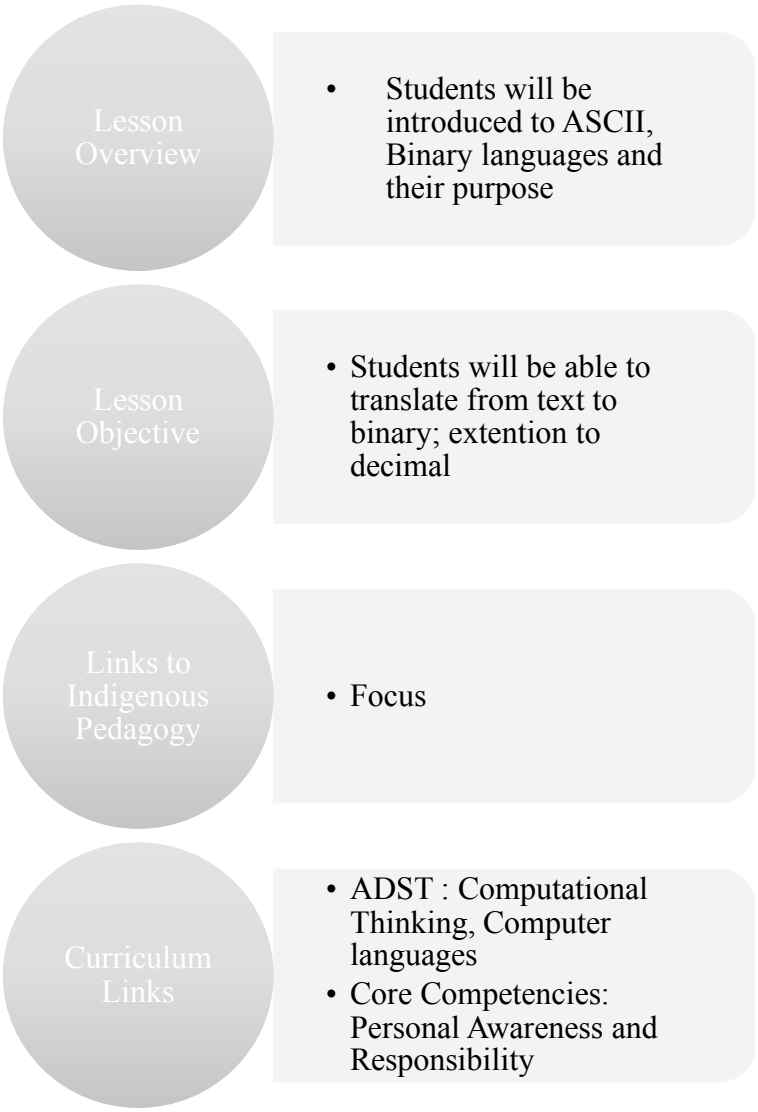
Core Competencies:

Communication: Connect and engage with others (to share and develop ideas)

Critical Thinking*:* I can tell the difference between facts and interpretations, opinions, or judgments.

I can examine evidence from various perspectives to analyze and make well-supported judgments and interpretations about complex issues.

Lesson Three: Coding



I highly recommend exploring the Thinkersmith (2013) Binary Bauble lessons before this undertaking this lesson.

In this lesson, the students use binary to encode their names using pony beads.

- Each letter of the alphabet can be represented in binary as an eight-digit combination of 0s and 1s.
- Students choose two colours of beads to represent the 0s and 1s and then use tables to translate their names into Binary code on beaded necklaces or bracelets.

The lesson can extend into discussions about translation, proofreading and debugging, as well as cross-curricular connections to culture, identity, mathematics and literacy. Students will be able to make connections between the necklaces they make and the beaded tweet bracelets.

Look through the Usborne Lift-the-flap Computers and Coding (Dickens, R., 2015) pages 1-2, 5-6. (Other pages might be useful for extensions in ADST).

- Ask the students what a computer is?
- What does it do for you?
- What are the differences between a tablet and a desktop computer?
- What is coding? A: writing instructions for computers
- What is a program? A: a finished set of instructions.

Introduce the words Hardware and Software. Hardware is the physical computer itself and its accessories. Software are programs that run on the computer. If you would like to explore more about the hardware of the computer look on pages 3-4 of Usborne Lift-the-flap Computers and Coding (Dickens, 2015).

- Why do we need computers?
- How do computers understand our instructions?
- The answer is switches. A computer can tell if a switch is on or off. When a switch is off it is a zero and when a switch is on it is a 1. This is binary language because there are only two choices.

Looking at the binary table on page 5 of the Usborne Lift-the-Flap Computers and Coding (2015) as well as the binary table below, you can see that there are 8 place values, but they are not like our metric system they start with 0 and go to 2 and then multiply by 2.

Table 2 Binary conversion between Binary and ASCII

Multiplier x	**128**	**64**	**32**	**16**	**8**	**4**	**2**	**1**
Binary (0 or 1)	0	1	0	0	1	0	1	0
Calculated value	0	64	0	0	8	0	2	0
Decimal	74							
Character	J							

When we look at the Binary Table above we see that the 0's and 1's tell us what to calculate and the decimal can tell us which character we need. We can look up special characters by using online converters: https://www.rapidtables.com/code/text/ascii-table.html Here you can type in a character and see what the binary. The Alphabet Binary Table and Special Characters Table can be found in APPENDIX.

Each letter consists of 8 bits of information, and 8 bits is called a byte. Computer storage is measured in bytes. Modern computers can store millions or billions of bytes. How this translates to the Beaded Tweet is through 8 Bead language, which makes the digital tangible. "8 bead language" is much like 8-bit language, each bead represents a bit and a row represents a byte, or letter. We are using the binary 0's and 1's. ex. 01001010 = 74 = J

ASCII= American Standard Code for Information Interchange; usually used to represent text

Computers store information in multiples of bytes. The bracelet would store 60 bytes of information, and this limitation is what connects it to twitter. A tweet is only 140 characters and some are now 280 characters with the new change in November 2017.

Benefits of starting without a computer:

Students can relate computational thinking beyond the computer if they start with tangible ways of coding, providing access points for all students. Coding can be done without a computer which is very important to students with limited access to technology. Students can make an entry in their beading journal about coding, maybe saving bits of code their translated or their feelings about the process.

Beading Foci

Focus. Focus is integral to the Indigenous Pedagogy; to be an observant, reflective learner you have to focus. This way of learning by watching and doing requires focus. It also allows for the learner to start where they are and improve with continued focus. Allow for

time like @Hayatsgan, allowing them time to put things aside and just focus on beading (whether the pattern is right, needle is going in the right direction). Creating something can be calming, and at the end of it you can feel accomplished, which is an incredibly important lesson for our students.

It will also take focus to learn and write code; debugging takes an enormous amount of focus.

Applied Design, Skills and Technology Curriculum:

Computational Thinking: Evolution of computer programing languages, visual representations of programs and data.

Core Competencies:

Personal Awareness and Responsibility: I can be focused and determined. I can set realistic goals, use strategies to accomplish them, and persevere with challenging tasks. I can tell when I am becoming angry, upset, or frustrated, and I have strategies to calm myself.

Lesson Four: Set A Purpose/Message

Lesson Overview	• Students choose what message will be on their beaded tweet bracelet.
Lesson Objective	• Students will choose a message and identify the intention of their message.
Links to Indigenous Pedagogy	• When someone learns a new skill, it is customary to give your first one away. (Peter McKay)
Curriculum Links	• ADST: Media Arts • English Language Arts • Core Competencies: Creative Thinking, Personal and Social: Relationships and Cultural Contexts

Students will be choosing what message will be on their beaded tweet bracelet.

Beaded tweet bracelet criteria:

- The message must be 60 characters long (making the connection to the character restrictions of Twitter).
- The student's message can reflect the person they are making it for, or be a representation of themselves, linking to identity and relationships.

- The message and photo of the completed project will be posted on Twitter once complete, so the students may want to use their beaded tweet to start a discussion.
- Show students the examples of beaded tweets Figure 13 and Figure 14. Figure 14 is a Beaded Tweet of my sister's Nisga'a name. I used her favourite colours with a copper

accent. Copper is important to Nisga'a people. Examples will also be available @Beaded_Tweets.

Students can use their beading journal to brainstorm ideas for their message and state their intentions of their message.

Beaded Tweet Example:

Figure 14. Second Beaded Tweet Bracelet: Reads in 8 bead language: "*K'am Ksi-algaxhl xsgaak tsim anluuhlkw Eagle talking from the nest."*

Beading Foci: Trust, Identity, Purpose

Much like the beginning of the unit we have to self-locate ourselves in our learning. Self-locating includes trust, identity, and purpose. This task is similar in that we have to make our intentions clear when starting our project. The project is a way of sharing a message. This message can be a reflection of identity, and it can be a message to engage with others. The first step to engaging in conversation or new learning is to self-locate, identifying who we are, where we come from, and what previous knowledge we have on the subject. When we set our purpose and are honest with our intentions in creating something, we can trust we are working in the right way.

The student must understand why they are learning something and from what I have experienced with the new Maker style of learning, if the student clearly states their intentions it is easy to accommodate the change and allows for emergent learning. If the student is clear and honest in approaching these beaded teachings, they will take more away from it, much like any other part of their education. The student can be observant, reflective and an active participant in their education.

English Language Arts Curriculum:

Select and use appropriate features, forms, and genres according to audience, purpose, and message.

Applied Design, Skills, and Technology Curriculum:

Influences of digital media for the purpose of communication and self-expression.

Core Competencies:

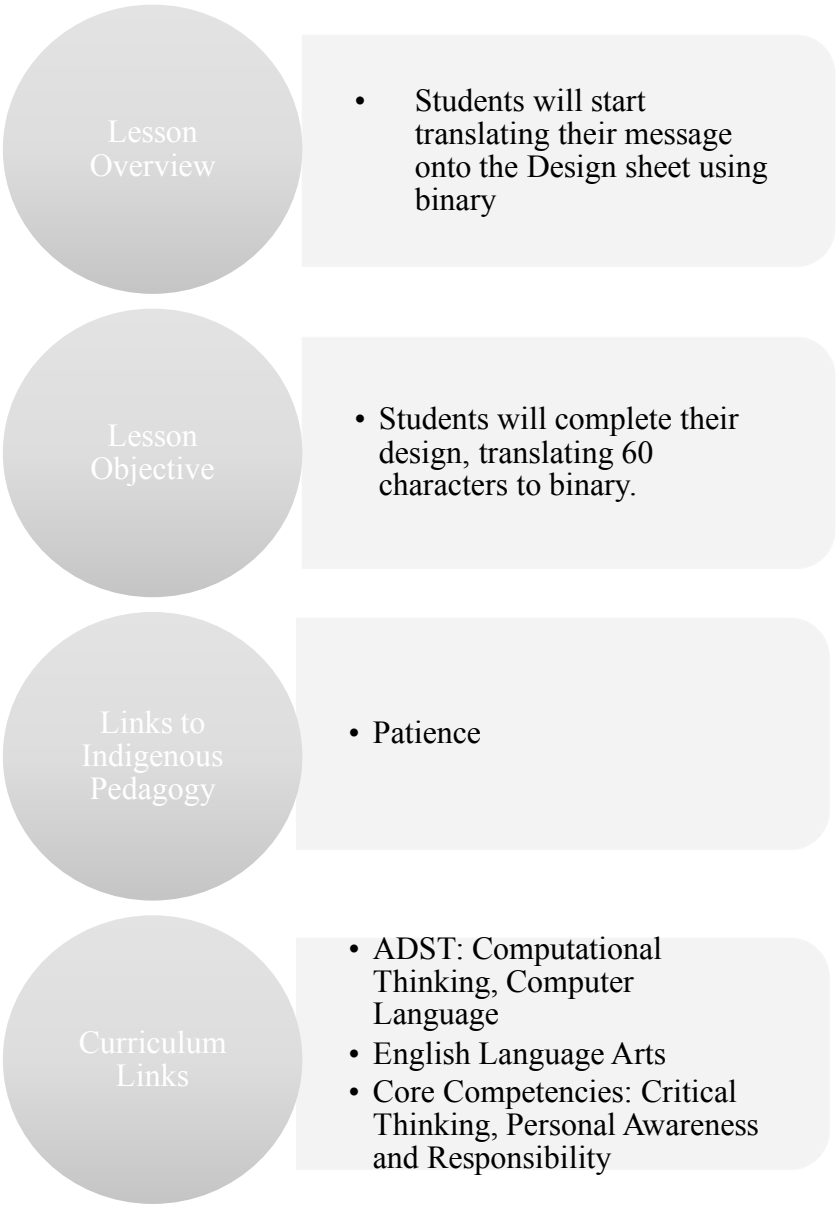
Creative Thinking: I generate new ideas as I pursue my interests.

Relationships and cultural contexts: Students understand that their relationships and cultural contexts help to shape who they are. (“Culture” is meant in its broadest sense,

including identifiers such as ethnicity, nationality, language, ability, sex/gender, age, geographic region, sexuality, and religion.) Students define themselves in terms of their relationship to others and their relationship to the world (people and place) around them.

I understand that my identity is made up of many interconnected aspects (such as life experiences, family history, heritage, peer groups).

Lesson Five: Design



Review binary coding.

- Eight bits for each letter/character with only two options, 0 or 1.
- If students have a space or other special characters or symbols they can look up their character on an ASCII table (APPENDIX).
- If the letter needs to have an accent or underscore on it, the best way to translate that on the design page (APPENDIX) is to put the 8 bead code for the accent first and then the 8 bead code for the letter.
    - This is important when using different languages on your beaded tweet.

- Give each student a design page and the binary table (APPENDIX).
    - Have a computer available in case anyone has used special characters.

- Each student will pick two colours; one to represent the 0 and one to represent the 1. I recommend one light and one dark, but it is up to the student. (See Figure 15, Figure 16, Figure 17 for examples of designs)
    - Also, if someone finishes their pattern and does not like the way it looks they can change the colours when it comes to the beading. They will just have to make sure to keep the coding the same for the 0's and 1's.
- It is recommended to use a sticky note to cover up the previous letter as you work through your code in order to mark progress.
    - A sticky note is also useful to pull the code from the binary table.
- Discuss with students what strategies work well for them, or have students say what is frustrating them and ask for help.
- Show the students the examples below for strategies.
- This will be an opportune moment to discuss the patterns in the binary code.
    - When we look at the first 4 bits of code what do the students notice for the uppercase letters?
    - What about when we compare uppercase to lowercase?
    - Will this help us with our design?
    - what are the most common letters in your design?

Students can use their beading journal to brainstorm ideas and colour choices and thinking about how they reflect their identity.

Examples Designing a Beaded Tweet:

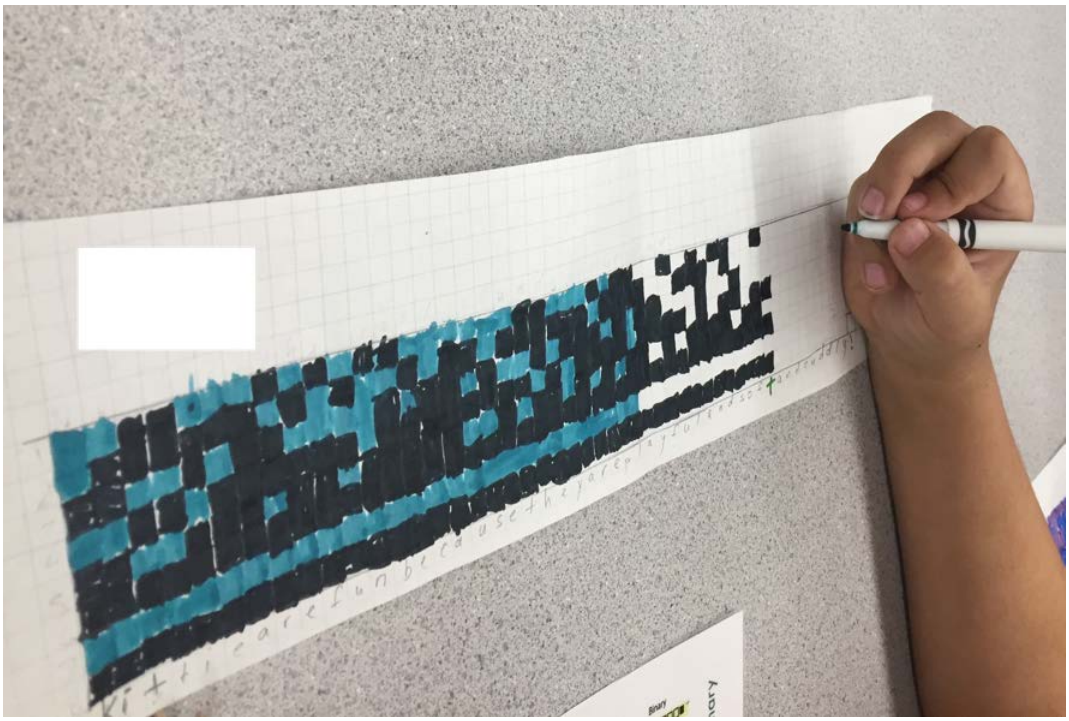


Figure 15. Using binary language to write/design message in bracelet pattern.

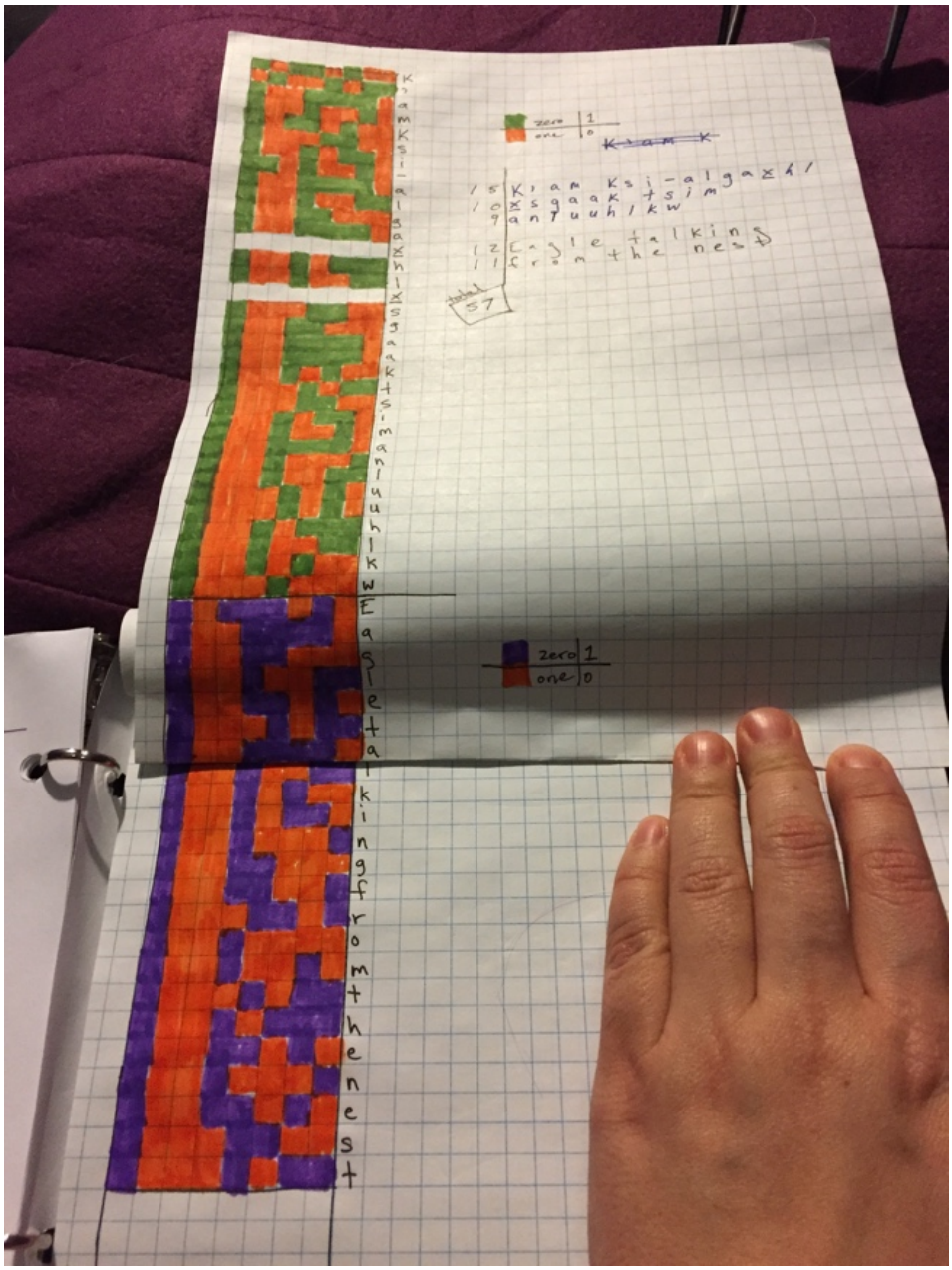


Figure 16. *Writing/Designing the second Beaded Tweet bracelet with my sister's Nisga'a name.*

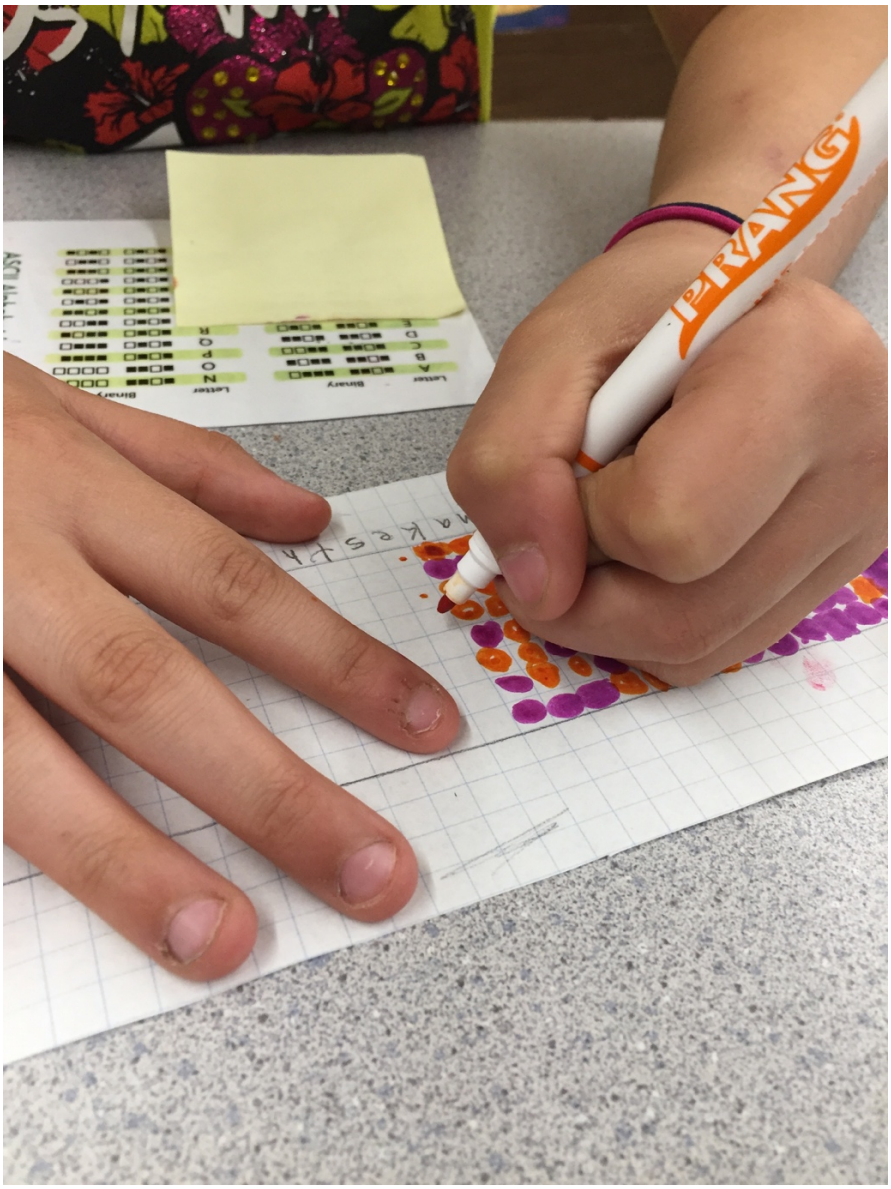


Figure 17. Using graph paper and two different coloured markers to design her Beaded Tweet.

Beading Foci

Patience. Students making a Beaded Tweets will have their patience tested. The time they are investing into this project will be significant. They must take the time to choose their message wisely. Making the pattern and then beading the tweet will take time and students will have to be patient for the bracelet to be finished. @Hayatsgan (Davis, 2017h) found that she was spending hours beading and the first one will always take more time (Figure 9).

Applied Design, Skills, and Technology Curriculum:

Computational Thinking*:* Evolution of computer programing languages, visual representations of programs and data.

English Language Arts Curriculum:

Language and text can be a source of creativity and joy.

Core Competencies:

Critical Thinking: I can make choices that will help me create my intended impact on an audience or situation.

Personal Awareness and Responsibility: I can persevere with challenging tasks.

Lesson Six: Setting up the Loom

Lesson Overview	• Students will set up the loom for beading.
Lesson Objective	• Students will set up the loom for beading.
Links to Indigenous Pedagogy	• Discipline While making something you cannot rush it because you must be in a good place. (Peter McKay, 2015)
Curriculum Links	• Arts: Processes, Materials, and tools •Core Competencies: Critical Thinking

The students will set up the loom for beading.

- I have used the Traditional Bead Loom Kit. It is a metal framed loom and beading needle (Figure 18, Figure 19).
- It is the perfect size for the size 10 beads (2mm).
- You can use larger beads but the loom should be set up appropriately for larger beads.

*A side project or extension could be to make your own loom using wood and nails.

- The loom will have 9 loom strings running across as the warp.
    - This can be done by wrapping and tying the thread onto the screw below the guides, and then running it up through the guides and over to the opposite guide and down to the screw, wrapping it around to anchor the thread (Figure 20).
    - Continue until you have 9 threads running parallel to each other creating the warp.

- Once you have your 9 threads, tie the thread to the screw.
- Cut an arm's length piece of thread for your needle.
- Tie one end of the thread to the outside thread on the loom, near one end (Figure 21). *This is where you can begin beading and your starting side.

Students can reflect on the process of setting up their loom in their beading journal.

- What was difficult?
- How did they get past a challenge?
- Why is it important to learn this step in the process?

Figure 18. Metal loom from ordered from Halfords.

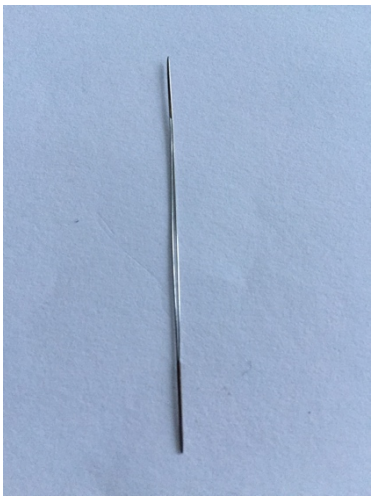


Figure 19. Beading Needle

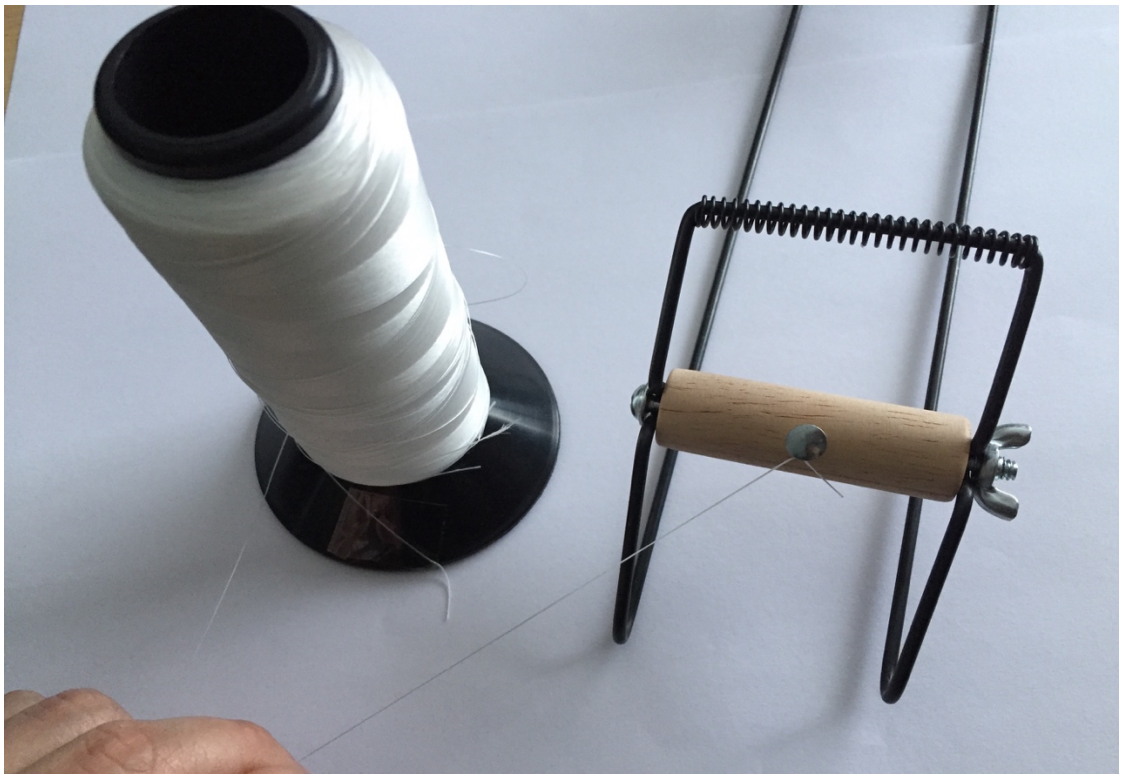


Figure 20. Attaching the thread to the loom to make the warp.

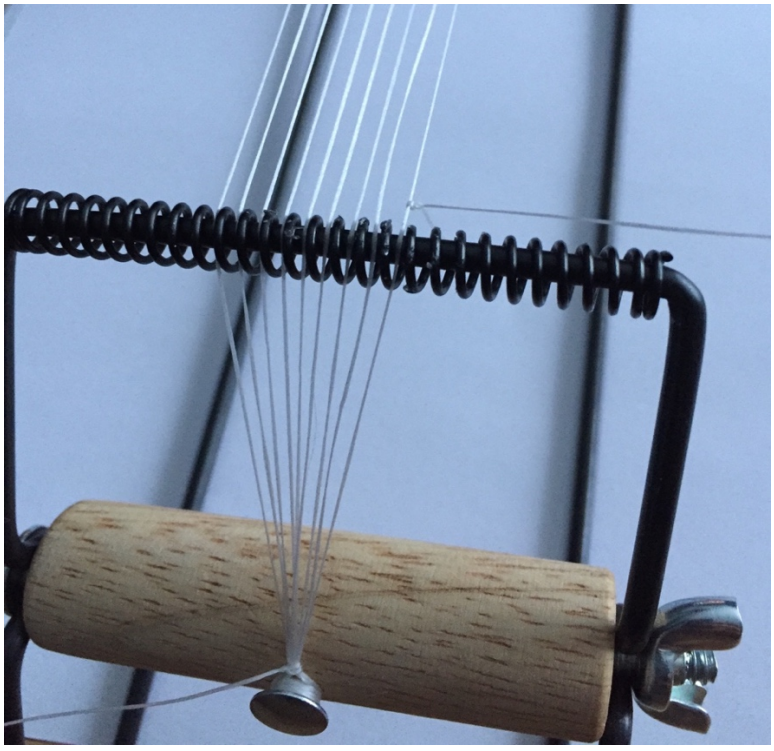


Figure 21. Loom setup for beading with weft attached.

Beading Foci

Discipline. Students making a Beaded Tweet will need to find time to sit and bead whenever possible just like @Hayatsgan (Davis, 2017i, Figure 10). While making something you cannot rush it because you must be in a good place.

Arts Curriculum:

Explore processes, materials, technologies, tools, strategies, and techniques to support creative works.

Core Competencies:

Critical thinking: I can explore materials and actions.

Lesson Seven: Beading

Lesson Overview	• Students will learn how to bead and the challenges that come and how to tackle them.
Lesson Objective	• Students will bead the bracelet and show strategies that help when they are frustrated.
Links to Indigenous Pedagogy	• When making a piece of regailia the person must be in a good mindset, focused on their task and feeling good (Peter McKay, 2015).
Curriculum Links	• Arts: creative expression linked to community and identity • Core Competencies: Personal Awareness and Responsability.

Students will begin beading.

- Students should be told that they may be frustrated if they run into problems, and that the best way is to stop and ask for help.
- Students should also try and focus on the purpose they set for their bracelet or think of the person they are beading it for while beading.
- Students will pick two bead colours for their pattern.
    - It is best to put the beads on a piece of paper towel or tissue or felt to help keep the beads in one place.
    - The first set of beads is always the hardest. Students will tie the beading needle to one side of their loom strings.
- They will then load the first set of 8 beads (Figure 22).
- The student will then position the beads with one bead between each set of loom strings.

- The needle will then be passed under the loom strings to the other side.
- Students will then push up on the beads making sure the hole of the bead is above the loom strings (Figure 23).
    - If the bead is below the strings when the needle goes through it is called a "dropped bead". These are common when you first start because they do not fall off the bracelet, but they create a uneven surface when the bracelet is complete.
- Students will run the needle through the beads, pulling to the side in which they loaded the beads (Figure 24, Figure 25)
- Next, they load the next set of 8 beads and repeat the process.
    - If the student goes around the loom instead of under loom strings or has a tangle, remove the needle and work the thread back through until you have reached a point where there is no tangle.

This is an opportunity for students to demonstrate strategies, like asking for help the moment they notice something is not right. It is easier to fix issues early on, but if they keep beading and making more tangles it may become more complicated to fix. I also emphasize that students should watch as someone helps them, so they can try and fix it the next time, or help each other. We are learning all steps of the process, so that they may try to do this independently in the future.

Beading a bracelet takes multiple sessions, and students should recognize when they are done for the session. Students can break up sessions with reading a book or a quiet activity. Students can make multiple entries in their beading journal with questions, drawings, or photos. They can write or draw out their frustrations or successes. These

moments of reflection allow the student to make connections to previous learning and self-assess their progress.

- Storage of the loom and pattern and beads is best done in a bin the size of a shoe box. They can be stored on a shelf and students can take it out when finished other work and bead a few rows.

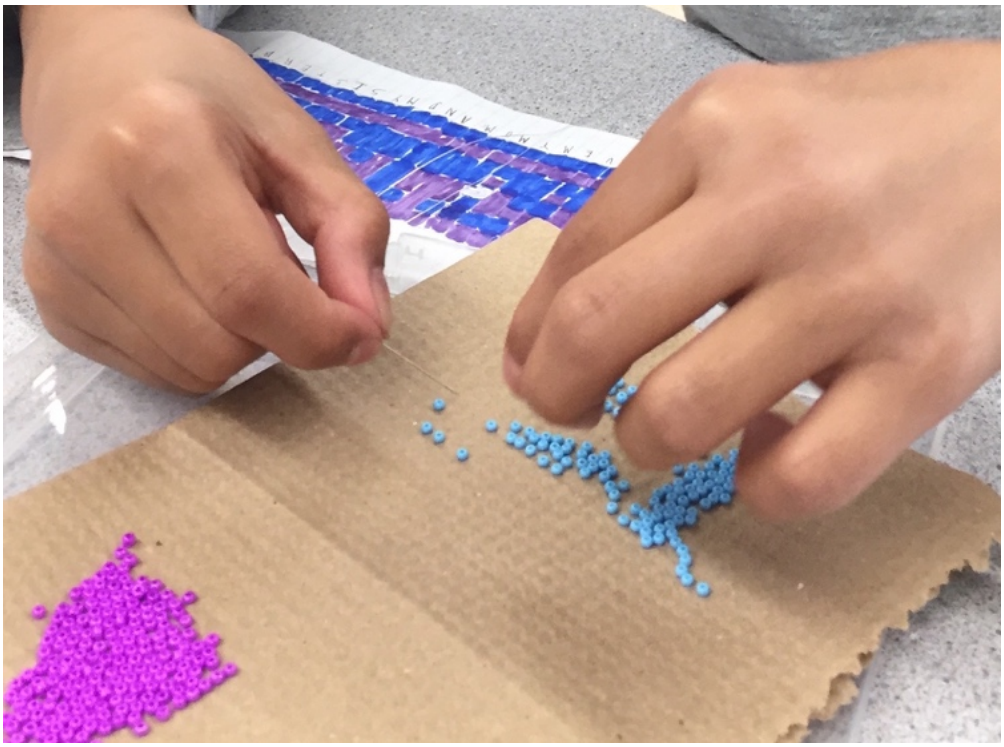


Figure 22. Loading the 8 beads onto the needle and weft.

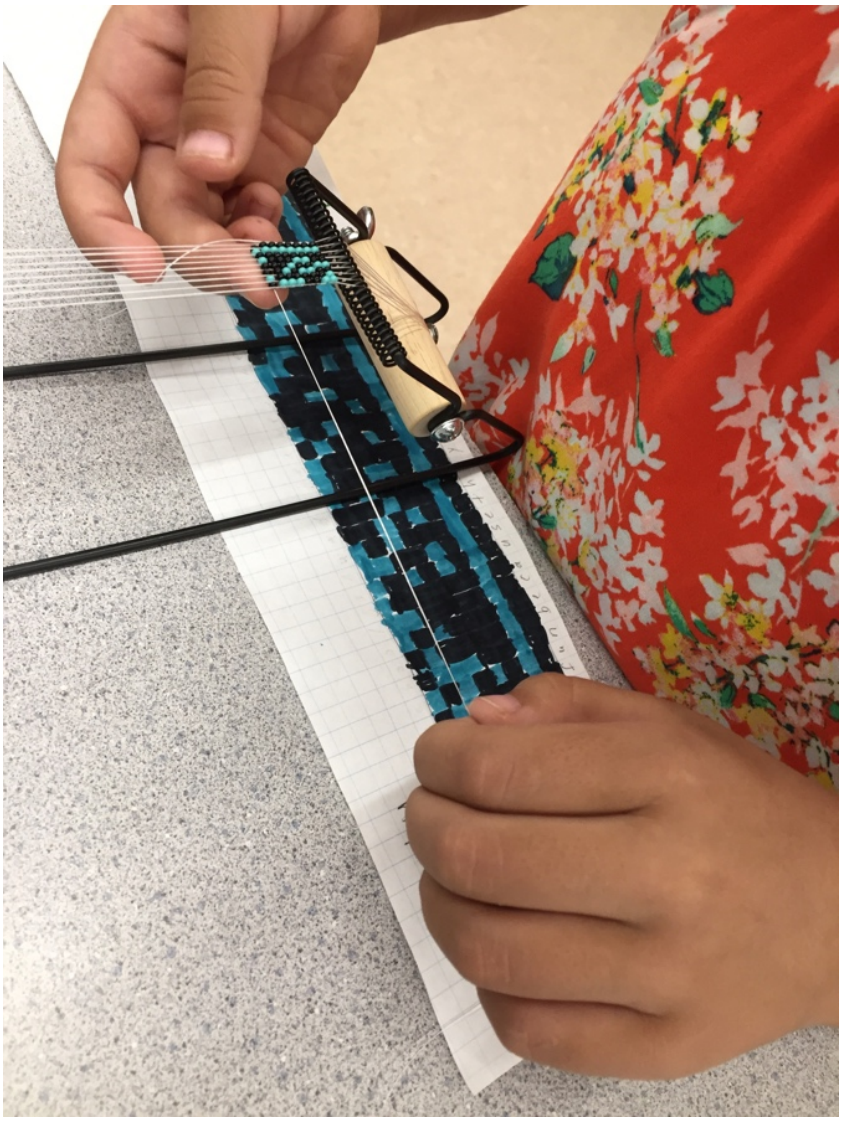


Figure 23. Pushing the beads between strings on the loom from underneath.

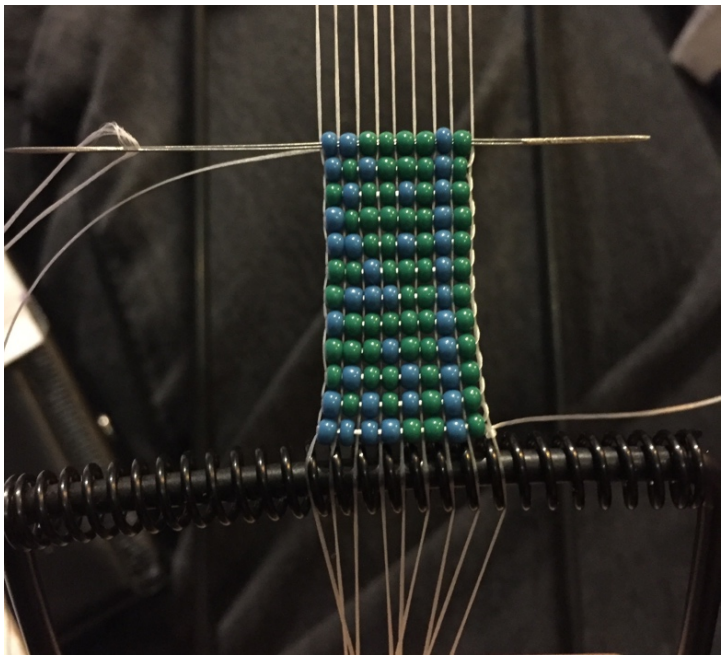


Figure 24. Beads are secured by running the needle back through to the starting side, making sure to go overtop the loom strings.

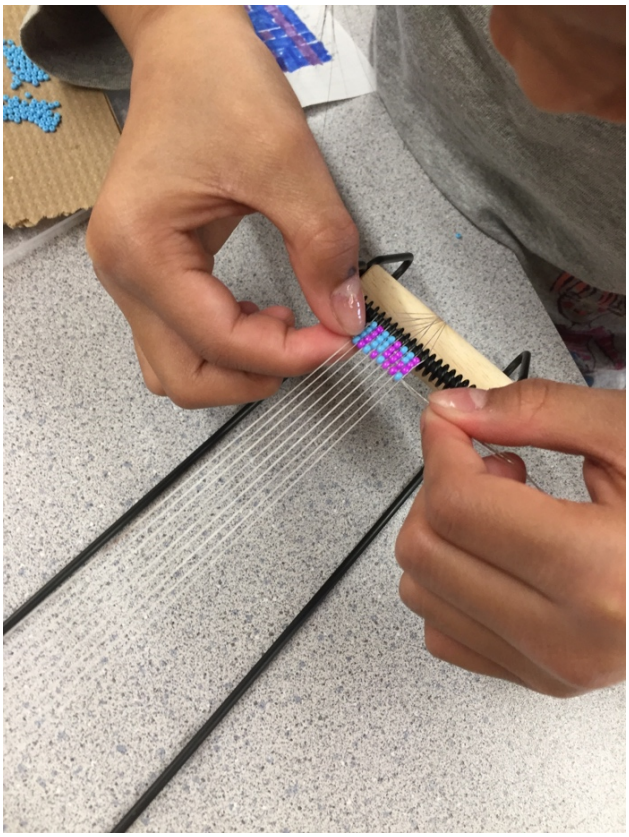


Figure 25. Pull the needle back to starting position.

Beading Foci

Perseverance. Sa'aamhl wilin- Keep up the good work. Keep learning and growing much like @Hayatsgan (Davis, 2017j) models perseverance in her tweet to continue learning. (Figure 11) While students are learning to bead they will make a mistake, either the thread getting tangled or missing part of their pattern. This will be a moment where they want to quit. If they need a break allow it, but they should finish what they started so they can have the sense of accomplishment for completing the bracelet. The moments when the students want to quit are a good time to recommend self-reflection of their progress from previous lessons.

Arts Curriculum:

Engaging in creative expression and experiences expands people's sense of identity and community.

Explore and engage with traditional and contemporary Aboriginal arts and arts-making processes.

Core Competencies:

Personal Awareness and Responsibility: I can use strategies that help me manage my feelings and emotions.

I can persevere with challenging tasks.

Lesson Eight: Finishing the Bracelet & Posting to Twitter

Lesson Overview

- Students will finish their Beaded Tweet bracelet and share their message and learning with the class. Posting to Twitter and celebrating their achievement

Lesson Objective

- Students will complete their Beaded Tweet and share with others.

Links to Indigenous Pedagogy

- The first item of something you make is often given as a gift. (Peter McKay, 2015)

Curriculum Links

- Arts: Explore Artists Intent
  ADST: Digital Literacy
- Core Competencies: Communication, Personal Awareness and Responsibility

Students have completed beading their message.

- After the student has finished their last row, they will go back and "S" the needle through the last 5 rows of beads.
- Then cut the thread and remove the needle.
- Next, the student will weave hemp through the loom strings, making 6 rows on each end of the bracelet (Figure 26).

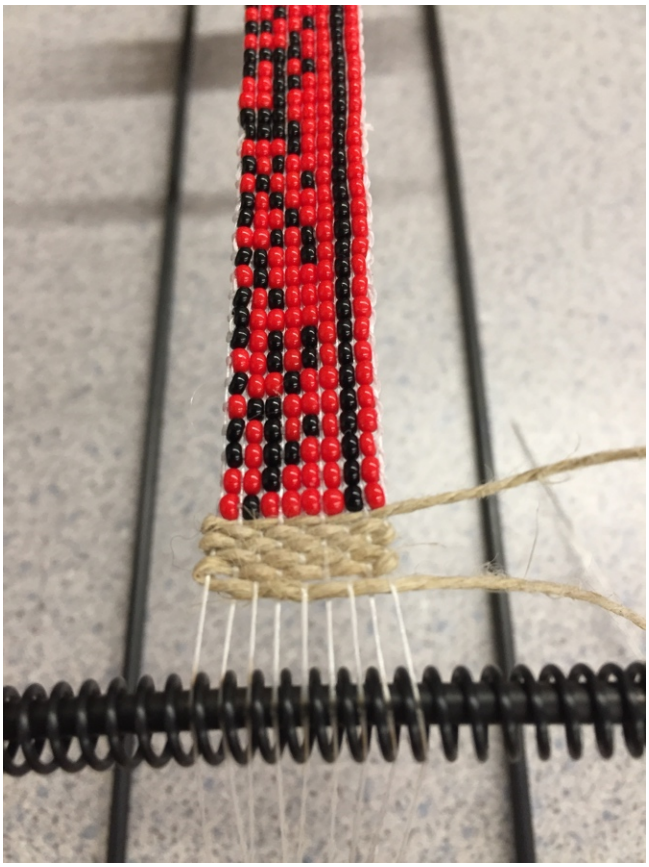


Figure 26. Weave the twine over and under to make 6 rows to secure the beads, do this on both ends of the bracelet.

- Now use adhesive on the woven ends on both sides and leave to dry for several hours.
- Now to cut your coloured suede. It will need to be slightly wider and long enough to fold over to cover the woven end (~2.0 cmX~4.0 cm). Cut a long (~0.5 cmx~24 cm) piece with tapered ends, and then cut into two equal pieces.
- Fold the suede over the woven ends to check that it fits, then fold the opposite way and cut a slit into the fold that is approximately the width of the two long strips.
- Cut the loom strings to release the bracelet, trim to the woven twine ends.
- Pull the long suede pieces through the hole of your end piece (Figure 27).

Figure 27. Assembled suede end.

- One for each side. Use the adhesive to glue the suede over the woven ends with the non-tapered end inside glued to the woven end (Figure 28).

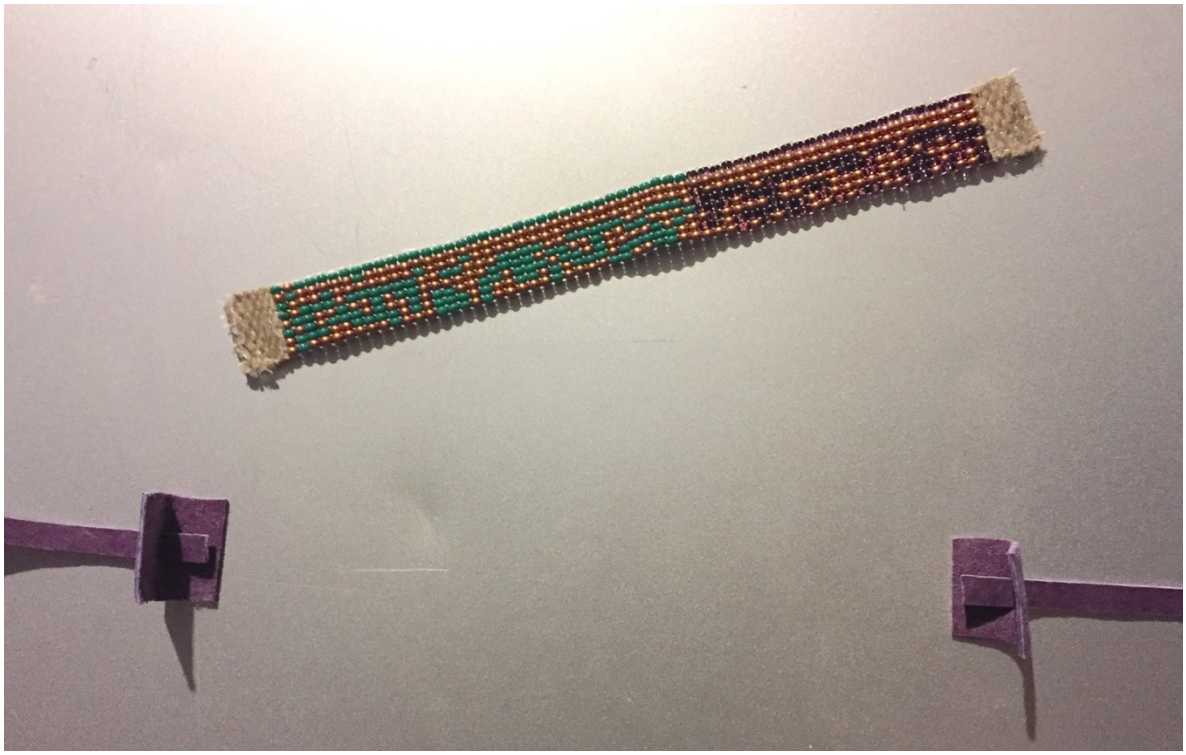


Figure 28. Layout to glue suede ends to twine ends of beaded tweet bracelet.

- Once this dries, put both ends together and thread them through one pony bead, and then add a bead to each end and tie off (Figure 29).

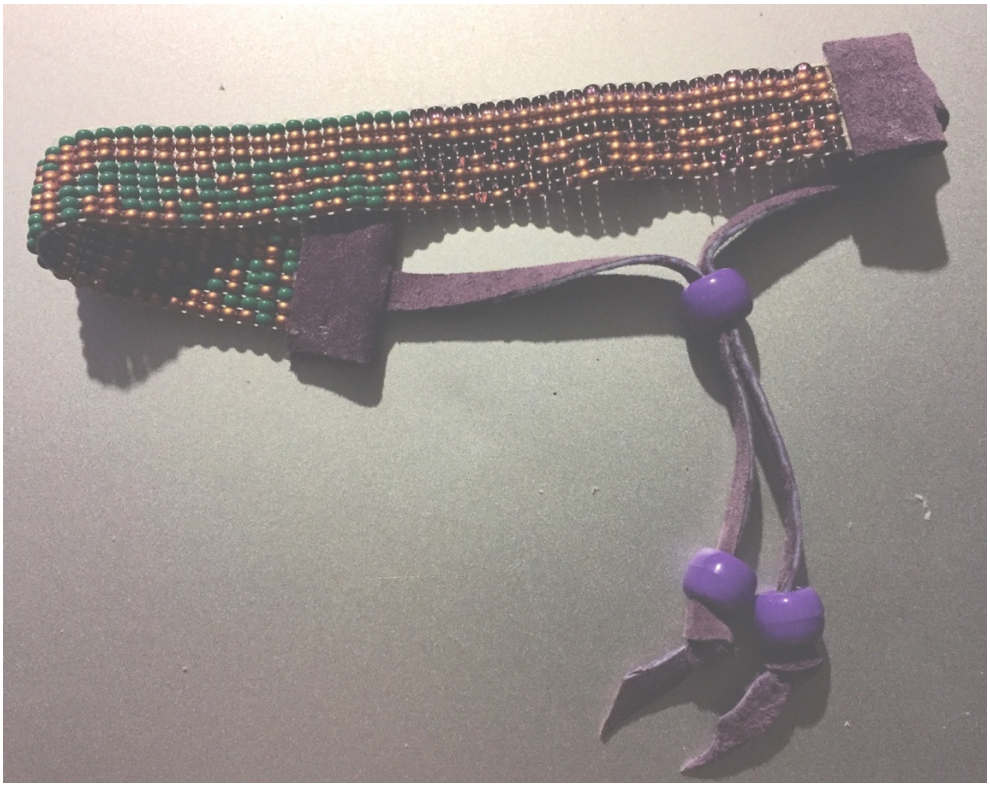


Figure 29. Attach pony beads, first both ends through one bead, then one on each end. Tie the ends.

Congratulations! Your beaded tweet bracelet is now complete

- Post a photo of your Beaded Tweet tagged with @Beaded_Tweets, sharing the message you have on your bracelet (Figure 30).

You could also create a class twitter account to post the Tweets and to explore and engage with Twitter.

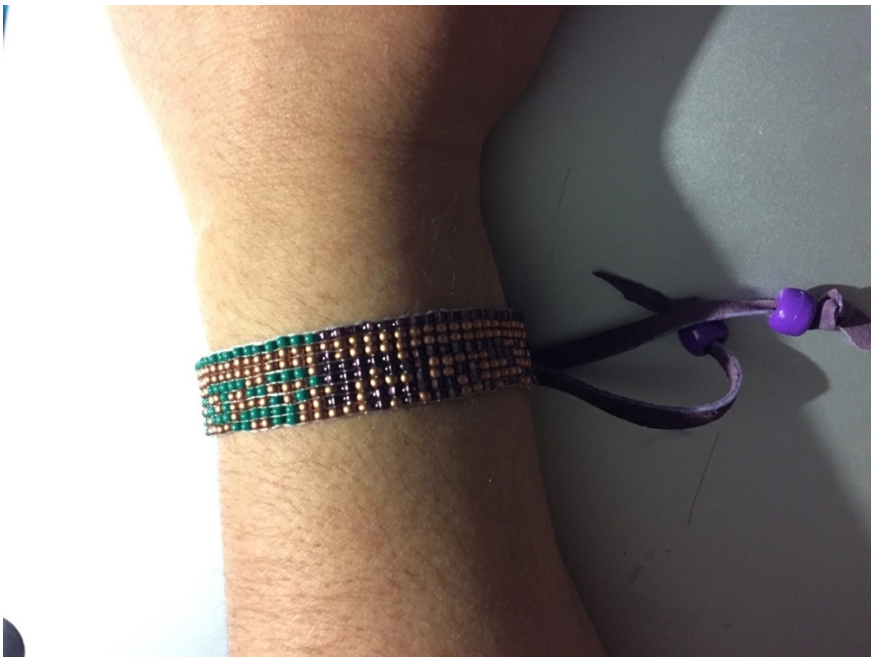


Figure 30. Wear your completed Beaded Tweet and share your message @Beaded_Tweets

Students will share what the message they chose and why they chose that message. Guiding the student by asking if the message is reflective of the student or the person they've made it for, or is it related to an event. The students can draft their presentation ideas using their beading journal.

Discussion:

- Ask if students noticed a similarity/differences in their messages.?
- Do they have new messages they would like to share after hearing from everyone?
- Ask them how they felt while they were beading and after they had finished?
- Did this project spark any ideas to go further?
- What was their favourite/not favourite part of the process?
- Would they do anything differently?

Beading Foci

Ownership and Sharing. Student will be sharing their message and why it is important and posting it to Twitter, tagging @Beaded_Tweets. Learning to share and interact with others who have shared experiences. It also allows for the cyclical nature to resurface by translating in and out of computer code and physical beads or drawings. Celebration and congratulations are in order for the students who complete their Beaded Tweet, because it is a long process, and they have most likely faces many challenges. Jax niin- Good job. The learnings that go along with beading are just as important as the beaded bracelet. The bracelet is the physical representation of those learnings.

Arts Curriculum:

Describe, interpret and respond to works of art and explore artists' intent.

Applied Design, Skills and Technology Curriculum:

Digital literacy*:* Digital self-image, citizenship, relationships, and communication

Core Competencies:

Communication: Explain/recount and reflect on experiences and accomplishments

I can recount simple experiences and activities and tell something I learned.

I can represent my learning, and tell how it connects to my experiences and efforts.

I ask and respond to simple, direct questions.

I am an active listener; I support and encourage the person speaking.

Personal Awareness and Responsibility: I can show a sense of accomplishment and joy.

I can celebrate my efforts and accomplishments.

Chapter Six: Final Thoughts

Conclusion

I set out to answer these questions at the beginning of my project:

1) How can educators explore contemporary content with traditional approaches in a tangible and practical way?
2) What framework can help educators create learning experiences where we integrate Aboriginal content and culture with the British Columbia curriculum?

The answer to both of these questions can be found in making the beaded tweet bracelet. The unit and bracelet itself are a way to incorporate both coding and Indigenous content. It connects multiple parts of the new curriculum; Indigenous content, Applied Design, Skills, and Technology and the core competencies. It mixes contemporary concepts like coding, with traditional practice of beading. By focusing more on the process of beading than on coding alone, I have created a framework for teachers and students to connect with their learning. Students will reflect on the teachings of beading in their beading journal; which can be linked to core competencies. Teachers will use the framework to reflect on their learning of Indigenous content and how to use these teachings to guide their work. Both student and teacher are working towards reconciliation.

The project is based in the reality that teachers face; they often are looking for practical application in addition to theoretical frameworks. This project provides educators with something that can start to engage their classrooms in the discussion of reconciliation, and incorporates Computational Thinking and Indigenous ways of knowing, providing teachers an access point to start using the new curriculum.

Materials are not always easy to come by and sometimes as in the case with @Hayatsgan's (Davis, 2017a) daughter's experience, may not provide appropriate context.

Educators need to feel comfortable teaching content that is new to them, and often want something they can bring directly to the students. This project aims to give them the practical aspect as well as a starting point for engaging in teaching Indigenous content and joining the conversation of reconciliation. Beaded tweets can be presented as professional development sessions as well as providing a unit to aid teachers with the new content.

The project includes both traditional and contemporary content. By incorporating social media and coding, we are relating to the current world students live and learn in. Making space for Indigenous knowledge and technology, and emphasizing the evolution of culture helps foster a culture of resilience for Indigenous knowledge, because our students are the next knowledge holders and have infinite connections at their fingertips. Teaching material and experiences that provide a space where Indigenous knowledge is honoured and welcomed so students have the drive to learn and find their strengths are the way forward.

Celia Haig-Brown (2010) has described "the prospect of living with the contradiction of two worlds, which is at the same time one world" (p. 268). In finding a common ground in social media, I hope to have reduced the feeling of contradiction experienced by students and educators. Each student can share their own message and perspective, and students can examine problems together and help each other.

Education is one of the driving forces for change, and the curriculum is finally reflecting the demand for change. The beading as learning framework uses the 8 foci, needle, and thread to discuss concepts to consider when approaching Indigenous content. Indigenous content comes from people, so it is not as easy and does not follow the same protocols as learning from a book. The knowledge is passed through Indigenous pedagogy, which is found in culture. Culture is the space between people, and we must try and navigate a way to aid non-Indigenous teachers to learn Indigenous content to aid in students learning. The

beading foci help the learner (teacher) observe, reflect, and participate. This project provides them a starting point in their learning and to enter the conversation of reconciliation.

As I worked through this project, I struggled with the wording of one of my questions. I think that I have phrased it correctly, but one word makes a significant difference: What framework or model can help educators evaluate or create learning experiences where we integrate Indigenous content and culture with the British Columbia curriculum? I was struggling, because the word integrate was commonly used to describe educators to integrating Indigenous content into their units or classrooms. The word integrate itself reminded me of assimilation and I certainly did not want that to be the basis for my project. I then looked at how the word assimilate would change when I used either "into" or "with"; when I used "into" the curriculum was assimilating the Indigenous knowledge and I did not want that at all. But when I used "*with*", integrate was seen more as equal parts coming together; one was not dominant over the other.

The curriculum is the framework that is available to teachers to use to plan their units and lessons, but this can often leave out important aspects of Indigenous knowledge. By providing a framework based in Indigenous pedagogy, I am modeling how to start with Indigenous knowledge as the framework.

Beaded Tweets is a project that emphasizes resilience, and that cultures evolve and can embrace common tools and practices to move forward. It allows for personalized learning with exposure to Indigenous ways of knowing, using the culture as the framework to teach the student much like the quote mentioned by Shendo (as cited in Ohio, 2012) earlier. Indigenous ways of knowing can be more than just content, and can encompass processes for learning. Using traditional mediums to work with contemporary messages and languages

such as coding languages provides a space where both Western and Indigenous concepts are honoured.

The practicality of the project provides a tangible way to interact with coding, as well as focusing on the teaching you learn while beading. The process of beading is a lesson in Indigenous ways of knowing, just like McLuhan's (1964) theory that "the medium is the message" (p. 5). The medium is the loom, and by doing and thinking about the 8 beading foci (identity, trust, connection, focus, patience, discipline, perseverance, ownership/sharing) students are developing in relation to the core competencies of personal and social, thinking, and communication. Through the beading journal, the learner can practice being observant, reflective and an active participant in their learning.

This project is a model of how our practice can reflect Nelson Leeson's (2007) hopes for the Nisga'a to be able to "dance in both worlds" (p. 9). Students need to have experiences in both, and create a balance that suits their needs. Beaded Tweets mixes the digital with the traditional, providing opportunities to find strengths in both. There are many projects that can be centered around Beaded Tweets and my 8 bead language. I will continue to explore ways to express contemporary content and issues through traditional mediums or vice versa.

Reflection

While teaching students to make a beaded tweet bracelet, I was able to see where the challenges and accomplishments happen and the strategies students use when confronted with something difficult. It was through my own learning and observation of my friend Rhonda Pierreroy in which the beading foci teachings came about. I had a grade 3 student who was a talented beader, and his focus and care he put into each bead, making sure it didn't drop. I was very excited for him to make a beaded tweet bracelet because of his beading ability. I was so focused on his beading ability I did not make arrangements for his

other needs. He does not like waiting and needs support with writing. He will often only give you one chance at this too. I brought him along with three other students to choose our message. He tried on his own first, and then did not like how it looked and grew frustrated. He refused to join the group again or come with me to work one-on-one to make the pattern. I thought about this in relation to my beading. I was so excited to get him started I forgot to look at all his needs, I thought that his talent for beading would be enough to be in the group. I think of this student as my "dropped bead", I did not think of all his needs; his strengths, his stretches. And in teaching, like beading, you can improve the next time and have dropped beads.

The beading framework helped me to see parts of my own learning through the process of writing the project. I needed to apply the beading foci teachings to complete this project and this is where the strength of Indigenous pedagogy are most important; the focus can expanded outward and drawn inward, much like a person breathing.

Along my journey with Beaded Tweets, I have started making connections to like-minded people. I met Melanie Howard from Queens University at an Indspire conference in Montreal (personal communication Nov. 30, 2017), and she is currently working with a student to develop a web-based app to help generate the Beaded Tweets patterns. The app will make it more accessible to learners who face time constraints. I think this is a brilliant idea, but also think that drawing the pattern contains important lessons that mirror the beading teachings: persistence, focus, discipline and patience.

I have created a twitter account for Beaded Tweets (@Beaded_Tweets) to return the message to the digital platform in which it originated. Mirroring the same cyclical nature of Indigenous pedagogy, in following each step of the unit plan you are creating a message that can dance both in and out of the physical and digital world. This can exist in conversation

with other projects that come out of the Twitter feed, for example the work from Queens to create a computer application that draws the pattern, which provides another place for beaded tweets to return to the digital sphere, complementing the spiraled learning of Indigenous pedagogy. The exploration of languages and differing patterns is where I would like to go next with Beaded Tweets and my 8 bead language.

Reciprocity

Each of these people has helped me in my learning and I would like to gift them with a beaded tweet bracelet to show my thanks.

Shawna Davis is my cousin, and her tweets about learning to bead from her Gwich'in family connected with me with my own learning. We were learning two different styles of beading, but the learning was similar and showed me the importance of the process, as well as the end product.

Rhonda Pierreroy is my friend and colleague, who has taught me so much about myself, but also how to loom bead. I was able to be the student and learn for myself, but also learn how to teach from observing Rhonda. She demonstrated and helped me through some of the beading foci while I was learning to bead.

Keane Tait is a Nisga'a mentor I started following on Instagram, and then met for the first time at WIPCE 2017. I joke that Nisga'a always seem to find each other, like we all have Nisga'a radar. His presentation on the Nisga'a language program in Vancouver taught me so much. I picked up on a few words, but also he reinforced the importance of learning language.

Peter McKay is my cousin and teacher. I learned so much from him in the cedar hat weaving workshop held by the Nisga'a Museum, Hli Goothl Wilp-Adokshl Nisga'a (The Heart of Nisga'a House crests). Upon reflecting on the workshop, I realize that Peter was

demonstrating Indigenous pedagogy, and it has greatly influenced my thinking. He also introduced me to the phrase “living culture”, that our culture is still here and we are making things to be used, not to be placed on a shelf and studied. We are living, breathing Nisga’a culture. The hat or basket or bracelet is meant to be used.

Linda O’Neill is my Co-supervisor on my committee, and she introduced me to qualitative methodologies and encouraged my inquiry into ways to express contemporary content and issues through traditional mediums or vice versa.

Tina Fraser is my Co-supervisor, who has been a part of my formal education in Aboriginal education since my Bachelors of Education. She is a strong ambassador for Indigenous methodologies and frameworks in academia.

Leona Prince is currently Vice-Principal of Aboriginal Education in School District 91. She is a strong advocate for Aboriginal education as a leader in her district, but also as a ERAC team lead. I am truly honoured to have worked with her at Nusdeh Yoh, to and call her friend. She founded and championed Nusdeh Yoh’s Makerspace @INDIGital_space.

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Davis, S. Aug. 27th, 2017h. @Hayatsgan •focus Put everything shitty that is going on in the world, everything horrific that has happened to you people past/present and bead. [tweet] Retrieved from https://twitter.com/hayatsgan/status/901870676109168642

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Davis, S. Aug. 27th, 2017j. @Hayatsgan •discipline To sit & bead whenever time allows. To not force anything: time, beads, patterns. [tweet] Retrieved from https://twitter.com/hayatsgan/status/901870208519856128

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APPENDIX

Binary Alphabet Table

Letter	Binary	Letter	Binary
a	1100001	A	1000001
b	1100010	B	1000010
c	1100011	C	1000011
d	1100100	D	1000100
e	1100101	E	1000101
f	1100110	F	1000110
g	1100111	G	1000111
h	1101000	H	1001000
i	1101001	I	1001001
j	1101010	J	1001010
k	1101011	K	1001011
l	1101100	L	1001100
m	1101101	M	1001101
n	1101110	N	1001110
o	1101111	O	1001111
p	1110000	P	1010000
q	1110001	Q	1010001
r	1110010	R	1010010
s	1110011	S	1010011
t	1110100	T	1010100
u	1110101	U	1010101
v	1110110	V	1010110
w	1110111	W	1010111
x	1111000	X	1011000
y	1111001	Y	1011001
z	1111010	Z	1011010

Sourced from: http://sticksandstones.kstrom.com/appen.html

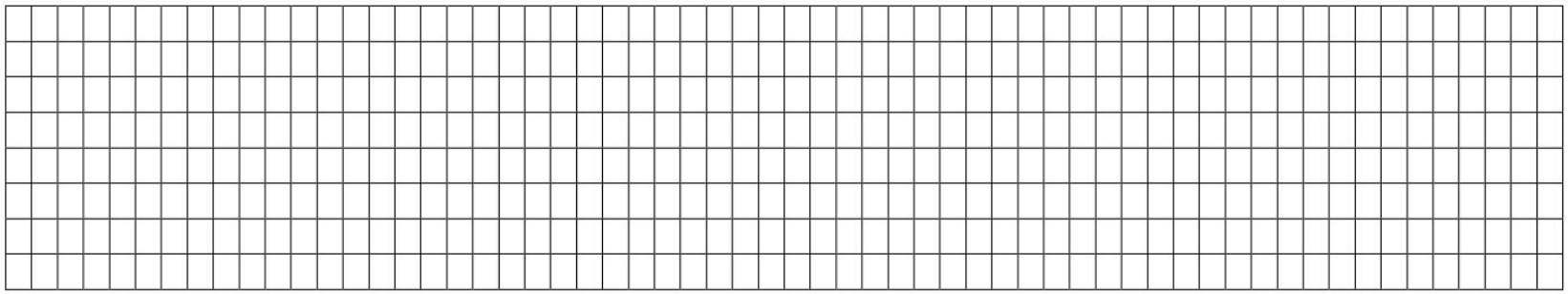
Special Characters Binary Table

!	00100001
"	00100010
#	00100011
$	00100100
%	00100101
&	00100110
'	00100111
(	00101000
)	00101001
*	00101010
+	00101011
,	00101100
-	00101101
.	00101110
/	00101111
0	00110000
1	00110001
2	00110010
3	00110011
4	00110100
5	00110101
6	00110110
7	00110111
8	00111000
9	00111001
:	00111010
;	00111011
<	00111100
=	00111101
>	00111110
?	00111111
@	01000000
Space	00100000
_	01011111

Using RapidTables ASCII Quick Lookup will help find other character that may not be listed above.

https://www.rapidtables.com/code/text/ascii-table.html

BEADED TWEET DESIGN PAGE:



0/zero ☐

1/one ☐

Message: